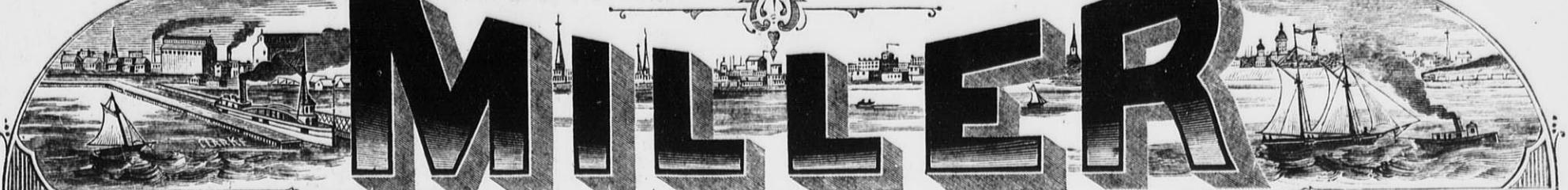


The United States

MILLER



Published by E. HARRISON CAWKER. { Vol. 17, No. 6. }

MILWAUKEE, OCTOBER, 1884.

{ Terms: \$1.00 a Year in Advance. Single Copies, 10 Cents. }

ONE OF THE KIND OF MILLS WE BUILD.

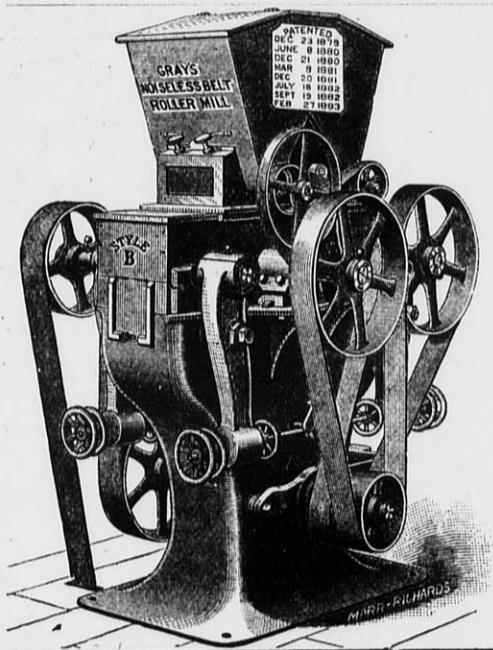
THE JOHN T. NOYE MFG. CO., BUFFALO, N. Y.

GENTLEMEN:—Since putting in the rolls made by you, and changing the bolting arrangements as advised, I have been running night and day, turning out over two hundred barrels of flour per twenty-four hours, with a yield surprisingly under $4\frac{3}{5}\%$. I doubt if our flour can be beaten in this country. This statement is pretty strong, but can be backed up. I can clean the middlings so that there is not a particle of flour left. Millers coming here to see our offal, do not believe but I have some secret way of manipulating the material. It is all square milling on superior rolls and with a superior system. I could not fill my orders if I had double the capacity.

Yours truly,

J. R. SCHALL.

Laury's, Pa., September 1, 1884.

GRAY'S NOISELESS BELT
ROLLER MILLS.

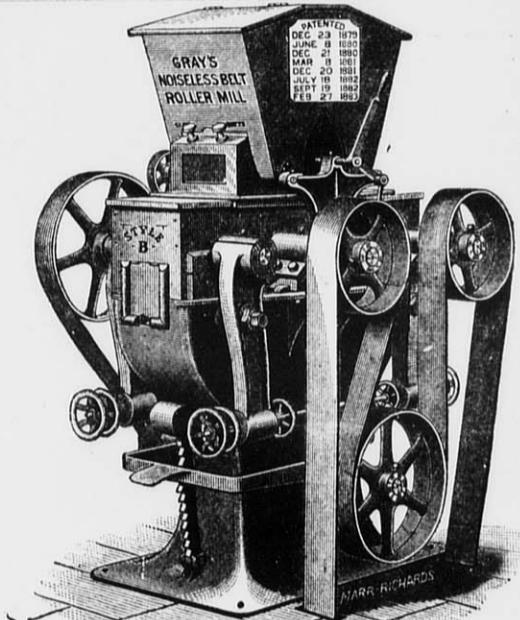
STYLE B

FOR SMALL MILLS.

Send for Circulars and Prices.

E. P. ALLIS & CO.,
Sole Manufacturers.

Reliance Works, Milwaukee, Wis.



ODELL'S ROLLER MILL SYSTEM.

Is now in successful operation in a large number of mills, both large and small, on hard and soft wheat, and is meeting with Unparalleled Success. All the mills now running on this system are doing very fine and close work, and we are in receipt of the most flattering letters from millers. References and letters of introduction to parties using the Odell Rolls and System, will be furnished on application to all who desire to investigate.

ODELL'S ROLLER MILL,

Invented and Patented by U. H. ODELL, the builder of several of the largest and best Gradual Reduction Flour Mills in the country.

AN ESTABLISHED SUCCESS

WE INVITE PARTICULAR ATTENTION TO THE FOLLOWING

→*POINTS OF SUPERIORITY*←

possessed by the Odell Roller Mill over all competitors, all of which are broadly covered by patents, and cannot be used on any other machine.

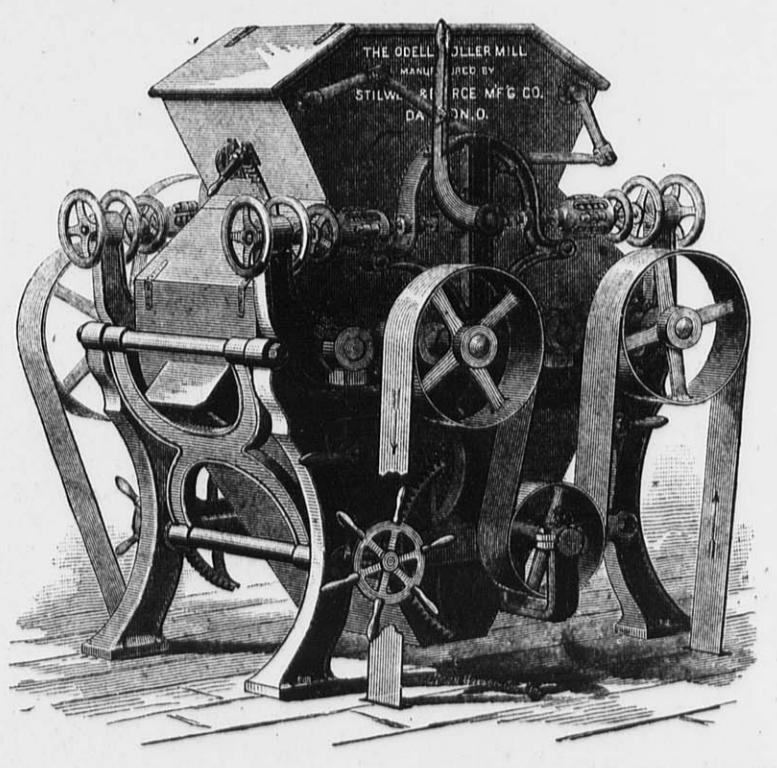
1. It is driven entirely with belts, which are so arranged as to be equivalent to giving each of the four rolls a separate driving-belt from the power shaft, thus obtaining a *positive differential motion* which cannot be had with short belts.2. It is the only Roller Mill in market which *can instantly be stopped without throwing off the driving-belt*, or that has adequate tightener devices for taking up the stretch of the driving-belts.3. It is the only Roller Mill in which *one movement of a hand-lever spreads the rolls apart and shuts off the feed at the same time*. The reverse movement of this lever brings the rolls back again exactly into working position and *at the same time turns on the feed*.4. It is the only Roller Mill in which the movable roll-bearings may be adjusted to and from the stationary roll-bearings *without disturbing the tension-spring*.5. Our Corrugation is a decided advance over all others. It produces a more even granulation, *more middlings of uniform shape and size, and cleans the bran better*.

We use none but the BEST ANSONIA ROLLS.

OUR CORRUGATION DIFFERS FROM ALL OTHERS, AND PRODUCES

LESS BREAK FLOUR and MIDDLEDINGS of BETTER QUALITY.

Mill owners adopting our Roller Mills will have the benefit of Mr. Odell's advice, and long experience in arranging mills. Can furnish machines on Short Notice. For further information, apply in person or by letter to the sole manufacturers,



STILWELL & BIERCE MANUFACTURING CO.,

Agents for Du Four's Bolting Cloth.

DAYTON, OHIO, U. S. A.

[Please mention this paper when you write to us.]

To SETTLE A DISPUTED QUESTION!

Owing to the fact that we are the only manufacturers of Roller Mills in this country who are authorized to build and sell machines containing Porcelain Rolls under the Wegmann patents, our business competitors have from motives of policy, been forced to oppose the introduction and use of the justly

CELERABTED

Wegmann Porcelain Roller

MILLS!

of which we are the exclusive licensees and sole manufacturers in America. As many millers have not yet given the Porcelain Rolls a practical trial, but have formed their opinions of their merits wholly from hearsay evidence, we desire to give millers generally an ample opportunity to determine for themselves, from a thorough trial in their own mills, the merits or demerits of Porcelain Rolls, and, therefore, make the following

OFFER!

We will sell any miller who is now grinding purified middlings on millstones, smooth iron rolls or scratched rolls, one of our

Gray's Noiseless Belt Drive Porcelain Roller Mills,

of suitable capacity, at our regular prices, and if the result of an impartial and careful trial does not establish the fact that the Porcelain Rolls are superior to either millstones, smooth iron or scratch rolls, for the purpose for which we recommend them, we will replace the Porcelain Rolls with either smooth or scratched iron rolls, allowing the difference in price; or the entire machine may be returned to us at our expense. Where millers desire, we will send a competent miller to instruct them in the proper handling of the Porcelain Rolls without expense to them. Our offer is made with the purpose of placing it in the power of every miller to satisfy himself that he is using the best machine for flouring purified middlings. Millers desiring to avail themselves of this offer should send sample of stock they wish to reduce, stating capacity required, to

EDW. P. ALLIS & CO.,

Reliance Works, Milwaukee, Wis.

The United States MILLER

Published by E. HARRISON CAWKER. { VOL. 17, NO. 6 }

MILWAUKEE, OCTOBER, 1884.

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(Abridged from *Die Muehle*, of Leipzig, for *The Miller*, London.)

GENERAL MEETING OF THE ASSOCIATION OF GERMAN MILLERS.

The sixteenth general yearly meeting of the Association of German Millers was held in the city of Breslau, Prussia, on the 22d, 23d, 24th, and 25th days of June last, under the presidency of Herr J. J. van den Wyngaert, who has now for many successive years filled the chair of the Association.

Breslau, the capital of Silesia, is held to be the third city of Prussia, and is unquestionably one of the most important centers of German commerce and industry. It lies in a wide-spreading but richly cultivated plain, bounded by the picturesque Trebnitz and Zobten mountains, which seem to beckon to the tourist and holiday maker. Altogether it must be conceded that Breslau was happily chosen as the meeting place for the annual gathering of the Association of German Millers.

Sunday, June 22, the first day, was marked by a committee meeting, held at Liebich's *Etablissement*, at 10 A. M., for the transaction of formal business, and to prepare the syllabus for the great meeting on the coming day. A social gathering took place at 6 P. M. on the Friebe Hill.

The first general meeting was held on Monday, June 23, at 9 A. M., and in the same building used for the committee meetings, the chair being filled by Herr J. J. van den Wyngaert, who opened the proceedings. After some graceful and complimentary remarks from the president, Herr Schmook, a member of the Town Council of Breslau, and Herr Iwand, president of the Silesian branch of the Association, the serious business of the day was proceeded with, and the chairman laid before the meeting a brief account of the work accomplished by the Association in the twelve months elapsed. He referred, among other subjects, to the award of one-half of the reward offered by the Association for the best essay on the "Adulteration of Wheat and Rye Flour," to the work of Dr. L. Wittmack, to the success of the milling school of chemistry, and to the revision of the ministerial prohibition of automatic lifts. The president concluded his remarks by expressing his regret that so few millers should have taken advantage of the facilities placed in their way by the Minister of Agriculture for the analysis of grain, and he made a formal appeal to his hearers to send on samples of wheat, not weighing less than three kilograms (somewhere between 6 and 7 lbs.)

Herr Klix, of Bärwaldt, then shortly addressed the meeting, prefacing his discourse with the remark that he was about to consider where the shoe pinched. He had no doubt that his milling brothers present all knew where the shoe pinched as well as he did, but no one seemed able to propose a remedy. To his way of thinking, a miller was a man who worked very hard and worried his life out for very small gain. Milling had been transformed by the great advance made in mechanical science during the past ten years, but were millers the better as a body? The only clear fact, to his mind, was that great mills, backed by large capital, were able to adopt such of these new devices as they chose, and to compel their poorer brethren to try and follow their example. For his own part, he thought it was high time to cry "hold hard" to the inventors, and to see what their inventions were practically worth. A certain professor had divided the manufacturers of machinery into two classes—those who made machines to sell, without caring whether the purchasers had to dispose of the same machines to the dealers in old iron or not, and those who were really competent engineers. Now millers wanted to make the acquaintance of engineers of the latter description, and if any man came to know a furnisher who sold good machines, why, let him tell it straight out to the committee in Berlin, so that every miller might know where to go for good advice. Herr Klix held that millers would do well not to keep their mouths shut like peddling hawkers, afraid of putting a penny in a ryal's

pocket, but to tell out what they knew like men. For if these general meetings were to be of real use they should serve to collect all that was known on the art of milling, so that each man might feel he had a personal share in helping the craft along. (Cheers.)

Herr Gessner, of Oelde, entirely agreed with the last speaker. He himself thought it would be a pity if the central committee, and the committees in the province, did not find some way of helping millers to avoid the pitfalls around them.

After more remarks, the president observed that it might be possible for a mill to be erected, at the cost of the State, which might serve as a school of milling, and as a sure means of testing the value of milling machinery.

The president then spoke at some length on the new law for the insurance of workmen against injuries, the principle of which he generally approved, although he criticised some of its details. It was proposed that the Committee of the Association be empowered to arrange with the Government, within four months after the coming into force of the law, for the institution of a Millers' Mutual Life Insurance Society that should extend its operations to every part of the German Empire. It was pointed out that it would be well for the milling trade to go forward and meet the Government half way on the question of the insurance of workmen, and that millers were far more likely to be able to insure their men on favorable terms when working in a powerful association than if acting alone. After a little discussion the motion was carried unanimously.

Herr Heyn, of Stettin, then read a paper on "Turbines." The proceedings of the second day were closed with a banquet held at five o'clock in the afternoon in the Liebich Rooms.

On the morning of the 24th, the Association held a second general meeting, the president taking the chair. The proceedings commenced with the reading of the balance-sheet, which was held to be satisfactory, showing a balance of 29,767 marks, or say £1,547. The choice of the meeting place of the Association for 1885 was then taken in hand, and after some little discussion, Munich, in Bavaria, was unanimously selected.

The president then read a letter of invitation, addressed to the Association by the National Association of British and Irish Millers, then assembled at Stockton-on-Tees, and on the motion of Herr Lehmann, of Liebsgen, it was resolved to dispatch a greeting by telegraph to the sister Association.

Herr Tschmarke, of Magdeburg, then read his report on the condition of the Fire Insurance Association. [It should be explained that the Association of German Millers have at present a convention with the Magdeburg Fire Insurance Company, by which the members of the Millers' Association can insure their mills against fire at relatively easy rates.] Herr Tschmarke regretted the unsatisfactory nature of his report, which tended to show that, with the development of scientific milling, the danger from fire increased instead of diminished. A single glance at the books of the company would bear this out. From the 1st of July, 1880, to the 1st of July, 1883, the proportion of premiums swallowed up by fire losses had been reckoned at 96.72 per cent., whereas at the present time no less than 98.11 per cent. of the premiums was called to pay fire losses.

Herr Stege, of Pasewalk, whilst deplored the losses in flour mills from fire, saw no other course than to subject all flour mills to a rigid system of inspection at the hands of properly qualified officials. The latter might exercise a wholesome pressure upon millers by grading mills according to the perfection or otherwise of their organization. Of course, those millers who had done their utmost to place their establishments on a sound footing, would be rewarded by paying the lightest premium. On the other hand, the lower the grade the higher the premium.

Herr Schäfer, of Mayence, thought the danger of fire was greatly increased by night work, and that it would only be fair for millers whose mills ran right through the twenty-four hours to pay enhanced premiums. He should very much like to see the comparative statistics of mills burned out in the night as compared with those taking fire by day.

After further discussion, Herr Tschmarke stated that he considered the plan of inspection both practicable and hopeful. He promised that tables of fire statistics, such as Herr Schäfer had called for, should be forthcoming.

The question of the tariff on grain, flour, and fodder was then introduced by Herr Joseph Stern, of Königshütte, who remarked that German millers were at a great disadvantage on having to pay a duty on their raw material, which the foreign manufacturer of flour escaped. He had no doubt that these duties had wrested from Germany a supremacy in the flour market that should have been hers, but he feared that it was too late to restore this position, even by a repeal of the duty in question. He wanted, however, to show that under the existing treaties of commerce, foreign millers had the privilege of importing their fodder in general, and bran in particular, free of duty, whereas the German who imports grain for conversion into bran is obliged to pay toll on the material upon which he proposes to work.

Herr Hirschberg, secretary to the Bromberg Chamber of Commerce, then submitted the following petition for the consideration of the Association, that "the Association of German Millers prays that the Imperial Government will lighten the incidence of the heavy burden laid on the milling industry by the tax on wheat, by imposing a duty of 50 pfennig (say 6d.) on every 100 kilos. (220.46 lbs.) of imported bran." Herr Hirschberg fully recognized the justice of Herr Stern's remarks on the disability imposed on millers by the grain tax. This impost, however, yearly brought a large sum into the Imperial treasury—last year, for instance, its proceeds amounted to 18,000,000 marks, or roughly, £850,000, and its remission was, for various fiscal and political reasons, out of the question. As the necessities of the Empire had placed millers in this disadvantageous position, it only would be just for the State to redress the balance by such means as lay in its power.

After a few words from Herr Gregory, of Hochst, who remarked that as a South German miller he felt no interest in a duty on bran, regarding, as he did, in common with all his brethren in the South, a heavy duty on flour as the only real equivalent for the present impost on wheat, the resolution was put to the meeting and carried by a large majority.

Herr E. H. Hoffmann, architect, of Berlin, read a paper on stone buildings, and the meeting closed by a short discussion on Sunday labor in mills, in which the president of the Association took part among others. The conclusion arrived at was, that although a law specially regulating the question is much to be desired, such a law can scarcely be looked for at present. It was stated that the practice of Sunday labor, although of doubtful legality, prevails extensively in many parts of Germany—wherever, in fact, the local police and other authorities choose to shut their eyes.

The proceedings were terminated by votes of thanks to the president and to Herr Woltersdorf, chairman of the committee. A trip by steamboat down the river to Wilhelms-hafen later on in the day, and an excursion by train to Freiburg and Firsenstein on the following day, were thoroughly enjoyed, and concluded one of the most successful meetings the Association of German Millers has yet had the fortune to hold.

STATISTICIAN WALKER'S VIEWS ON THE WHEAT AND EXPORT GRAIN TRADE.
That the price of a bushel of wheat is lower in Great Britain to-day than ever before; that the price is lower here than since

1851, and that freights by steam and sail from here to Europe are remarkably low, do not indicate that the consumers of Europe are to be fed entirely upon the products of American farms this year. In fact, ship-owners and shippers of American produce would feel greatly encouraged if prices for grain were higher; for high prices follow limited crops, and low prices are governed by increased products. But while the trans-Atlantic tonnage under foreign flags is not to be favored with large freights, the consumers may hope to receive the benefit in the cheapening of food, and know at the same time that their hard-earned money is not to be sent over to the other side of the Atlantic for it. They may also feel encouraged in the fact that, although there have been unusually large crops in Europe, one-fifth of the requirements must come from American soil, and the American farmers will thus be benefited to that extent. The price of No. 2 red winter wheat (which is the current grade of wheat at present) in New York to-day is 86 $\frac{1}{2}$ cents a bushel, and lower than before since 1851. The price of the same wheat in Liverpool is 60d, or \$1.20 which is lower than ever before. As to the causes of low prices, and regarding the present condition of the grain crop, A. H. Walker, statistician of the Produce Exchange, and recognized authority, says:

"There are many circumstances which combine to cause low prices. First are the freights. Great Britain, you know, owns about one-half of the merchant tonnage. The tonnage for eighteen months past has not made a dollar above the actual running expenses. At the same time the property has depreciated from 10 to 15 per cent. a year. Hence, low freights. The oversupply of tonnage more nearly equalizes freights throughout the world than was ever the case before. Another cause is the unprecedented fine condition of the wheat crop in Europe at the time of harvest. It was gathered in a condition to go direct to the flouring mill. There was an average wheat crop throughout Europe, and the home growth was about eighty per cent. of the requirements; thus leaving 20 per cent. to be supplied by other countries. The wheat crop here was about the average, and of good quality, the average yield of winter wheat being about thirteen bushels to the acre. The total yield of winter and spring wheat will amount to about five hundred million bushels. Its condition was prime, and was harvested ready to be threshed. Usually the grain at harvest is in a damp condition, unsuitable for flouring, and a large proportion being necessary to stack for curing. Its excellently cured condition this year makes the crop of Europe immediately available.

"Another cause for the low prices is the depressed condition of nearly all kinds of labor in Europe. Ship building in Europe is checked, mining is less active, the manufacture of all kinds of iron is diminished, the woolen mills are running on short time, and the non-employment of labor curtails their ability to purchase—hence, diminished consumption. Although wheat is so cheap, in Great Britain especially, the loaf of bread costs as much as when wheat was dearer, making bread the most expensive food of the day. Another of the reasons for low prices of wheat is the full crops all over the world. The condition of the new crop of corn is promising. If good weather continues and there are no heavy frosts, the probability is that the crop will be larger than ever before and of good quality. It shows a better condition than any year since 1870, and a production of 1,800,000,000 bushels. The exports of corn for the past eight weeks have been slack, those from Atlantic ports showing a decrease of 6,000,000 bushels, as compared with the corresponding eight weeks in 1883. This increase is due to the prices being greater than for the low grade of wheat which is substituted for corn for food consumption. A confirmation of this is the fact that the exports of wheat (flour included) for the past eight weeks have been 21,147,108 bushels against 14,585,405 bushels."—*New York Tribune*.

UNITED STATES MILLER.

PUBLISHED MONTHLY.

OFFICE NO. 124 GRAND AVENUE, MILWAUKEE.
Subscription Price \$1 per year in advance.
Foreign Subscription \$1.50 per year in advance.

MILWAUKEE, OCTOBER, 1884.

ANNOUNCEMENT:

W. DUNHAM, *Editor of "The Miller," 69 Mark Lane, and HENRY F. GILLIG & Co., 449 Strand, London, England, are authorized to receive subscriptions for the UNITED STATES MILLER.*

We send out monthly a large number of sample copies of the UNITED STATES MILLER to millers who are not subscribers. We wish them to consider the receipt of a sample copy as a cordial invitation to them to become regular subscribers. Send us One Dollar in money or stamps, and we will send THE UNITED STATES MILLER to you for one year.

The United States Consuls in various parts of the world who receive this paper, will please oblige the publishers and manufacturers advertising therein, by placing it in their offices, where it can be seen by those parties seeking such information as it may contain. We shall be highly gratified to receive communications for publication from Consuls or Consular Agents everywhere, and we believe that such letters will be read with interest, and will be highly appreciated.

TO ADVERTISERS.

Milwaukee Wis., October, 1884.

To Those Interested in the Flouring Trade:

THE UNITED STATES MILLER is now in its ninth year, and is a thoroughly established and much valued trade paper. It has a large regular list of domestic and foreign subscribers. It is sent monthly to United States Consuls in foreign countries, to be filed in their offices for inspection by visitors. It is on file with the Secretaries of American and European Boards of Trade for inspection of members. Aside from the above, thousands of SAMPLE COPIES are sent out every month to flour mill owners who are not subscribers, for the purpose of inducing them to become regular subscribers, and for the benefit of those advertising in our Columns. Every copy is mailed in a separate wrapper. Our editions have not been at any time since January, 1882, less than 5,000 COPIES each, and are frequently in excess of that (see affidavit below). We honestly believe that the advertising columns of the UNITED STATES MILLER will bring you greater returns in proportion to the amount of money invested than any other milling paper published. Advertisers that have tried our paper for even a few months have invariably expressed themselves well satisfied with the results. Our advertising rates are reasonable. Send for estimates, stating space needed. The subscription price of the paper with premium is One Dollar per year. Sample copy sent free when requested. We respectfully invite you to favor us with your patronage. We shall be pleased to receive copies of your Catalogues, and also trades items for publication free of charge. Trusting that we may soon be favored with your orders, we are,

Yours truly,

UNITED STATES MILLER.
E. HARRISON CAWKER, Publisher.

"MILL FOR SALE" ads. inserted once for \$2.00, or three times for \$5.00, cash with order.

"SITUATION WANTED" ads. 50 cents each insertion, cash with order.

Publisher's Affidavit Concerning Circulation.

STATE OF WISCONSIN, ss.
MILWAUKEE COUNTY, ss.

E. HARRISON CAWKER, editor and publisher of the *United States Miller*, a paper published in the interest of the FLOURING INDUSTRY at No. 124 Grand Avenue, in the City of Milwaukee and State of Wisconsin, being duly sworn, deposes and says that the circulation of said paper has at no time since January, 1882, been less than FIVE THOUSAND (5,000) copies per month; further, that it is his intention that it shall not in the future be less than FIVE THOUSAND copies each and every month; further, that he has paid for regular newspaper postage at the rate of two (2) cents per pound on domestic and Canadian newspaper mail for the last eight (8) months, including May, 1884, the sum of \$160.00, showing that in that time 8,045 pounds of *United States Miller* have been mailed; further, that the foregoing postage paid does not include postage paid on city and foreign papers (Canada excepted). [Signed]

E. HARRISON CAWKER,
Publisher *United States Miller*.

Subscribed and sworn to before me, this 30th day of June, 1884.

B. K. MILLER, Jr., Notary Public,
Milwaukee County, Wis.

Amount of postage paid for June, \$18.26; July \$17.02; August, \$17.58; September, \$17.66. Affidavits will be sent to advertisers from time to time. The original post office receipts can be seen at any time in this office.

OWING to the removal of the office of the UNITED STATES MILLER from No. 116 to No. 124 Grand Ave., our Journal is behind time this month. We trust our readers will excuse the delay.

Mr. Dalrymple, the great Dakota farmer, is credited with saying that he can raise wheat for 35 cents per bushel without absolute loss. But it all depends upon the yield. If he has 25 bushels per acre, he would realize \$8.75, which might pay him for the labor involved, seeing that his land is all broken. But if the expense of breaking be included \$8.75 would net a loss of about \$3.00 per acre.

LEFFEL'S HOUSE PLANS.

We have received a copy of the above entitled work, which is meritorious indeed. The work presents plans, specifications and estimates for houses of moderate cost, suitable for the mechanic or moderately well off business man. We cheerfully recommend it to those intending to build houses of moderate cost.

THAT BRAN PACKER.

We are informed by the best of authority that a very large number of plans, specifications and models of machines for packing bran have been received, many of which show great merit. It will probably be a knotty question for the Committee to decide which is really the best machine and to whom to award that \$1,000 prize.

We heard a prominent miller say not long since that he thought this country would be better off if no machine was invented which would make it possible to export bran in large quantities to foreign countries—that every pound of bran should be kept here for the purpose of feeding to our live stock. There is considerable in this argument, but nevertheless, if a good and economical machine is invented it will meet with a large sale. We hope the machine will be invented and the inventor rewarded at the December meeting of the Millers' National Association.

A CURIOUS CASE.

A curious case is before the tribunal in Paris. A gentleman was getting down from an omnibus in a crowded thoroughfare, when he missed his footing, nearly fell backward, and, to recover his balance caught hold of another passenger. The latter, taken by surprise, also found himself in danger of falling, and, in his turn, caught hold of a woman with an infant in her arms, the upshot being that all four rolled together into the road. A heavy goods van was coming along behind, which, had it not been for the prompt action of the omnibus conductor, who seized the horse's head, would have run over some of the prostrate forms. As it was, the gentleman who was the original cause of the accident escaped with a few trifling bruises; the other male passenger, falling on him, was not hurt at all, and the infant was equally fortunate; but its mother had her arm broken and sustained other severe injuries. Which of the two gentlemen should pay damages is the question—the one who caught hold of her or the one who caused him to do so by catching hold of him.

A SCHOOL FOR MILLERS.

Much has been said and written on this subject, but so far as we know, nothing has yet been done in this country to secure the establishment of one. That there is a demand for an institution of this kind we know, for scarcely a month passes but we receive one or more letters from young men in various sections of the country inquiring if there is a Millers' School in the United States.

The modern systems of milling have become very complicated and in order to learn the trade in a reasonable time better advantages than a young man is liable to receive in a good mill should be obtainable.

Milling schools in Europe we are informed are profitable and well patronized. Many may say that the only proper school for a person who desires to follow the trade of milling is in the mill itself, but we all know that it is difficult for an inexperienced person to obtain a situation in a good mill. We trust that the various State and National Associations of Millers will not only talk this matter over again, but put it in tangible form. If no private individuals desire to establish such a school, let the millers organize a stock company and we are well satisfied that subscriptions for stock will come in at a lively rate from all parts of the country, and that the enterprise with a suitable board of directors and teachers would prove not only successful from a financial point of view, but would be a great blessing to the young men who desire to become well qualified millers, able to take charge of their father's or anybody else's mill.

SPONTANEOUS COMBUSTION.

During the year we often read of fires from causes unknown, or spontaneous combustion, the origin of either or both of which is so wrapped in mystery that few care to undertake to fully investigate, with present premiums, for such tedious and tiresome results; for when the mill or factory is reduced to ashes, it requires something more than imagery and theory to make them, Phoenix-like, rise from their ashes, and again greet the ears with the noisy din which previously characterized their places, now silent, desolate, and smoky. In view of this, together with other good reasons, we must base our argument on actual laboratory data and chemical research

while the buildings stand, drawing our conclusions "after the fire".

Our readers will remember, perhaps to the sorrow of some, the fearful loss by fire of mills in the West and Northwest a few years ago. At one time it appeared as though incendiarism and spontaneous combustion, one or both, was to obliterate these marks of an advanced stage of industry and civilization. Eventually, however, the fires began to decrease in number, and money sought investment in these industries long before the question was fully decided regarding the whys and wherefores of these fires; and at this day, notwithstanding the fact that mill and factory fires continue to rage, this question remains far from being solved. Insurance companies, in their efforts to protect themselves, often come across well-laid schemes to defraud them, but they are often defrauded as effectually by honest though ignorant persons, who permit the existence of certain facts in connection with the care and management of their business, and some morning the news is flashed across the country, "Burned from unknown causes."

Take, for instance, the grist-mill. All who have come in contact with it know that, floating all through the mill, are minute particles of dust. This dust is nothing more nor less than vegetable matter in the finest state of subdivision, and the very instant they float near a fire, unseen combustion ensues, so fine are these particles of grain or vegetable matter. Now, if we have a poorly ventilated building, and no current of air to move these particles about, they will congregate about the warmer places, and will eventually take fire from the journals. We have seen fire generated in sufficient quantity by a driving belt to make quite a respectable showing of fire when the small particles of corn-husk came in contact with it.

Again, if we chemically examine a kernel of any kind of grain or cereal, we shall find hidden about the germ variable quantities of a highly-combustible gas—a gas that will take fire at a temperature slightly above the boiling point of water; hence, if we happen to be grinding grain in a poorly-ventilated building, the journals, belts, boxes, etc., all working together in generating heat, the gases being accumulated rapidly by the rollers or stones crushing the grain, the finely subdivided woody fiber floating in close proximity, is it any wonder that the low heat required to ignite the gases could be easily communicated to the fine dust, and finally the entire building be in flames? The great wonder is that these fires are so few. In addition to this, mill fires are the hardest to manage and subdue of any, for the reason that in every nook and corner these gases and touchwood are present; hence, fuel of the best possible variety is constantly being added, and we are told the fire was beyond control when discovered, when it might have been said with equal propriety that it was beyond control the instant it was started. Inasmuch as we have practically demonstrated that, with a condition of things as indicated in the foregoing, the entire building might have been submerged in water for an instant, still the fire would not be subdued, for it must be remembered that these gases from grain, unlike many others, have not the least affinity for water; hence, water merely adds fuel to the flames by distributing fire among the tinder.

In conclusion, we beg to state that, regarding other forms of spontaneous combustion (the foregoing is not), we are taught by chemistry that the elements of fire, if isolated, will not seek each other; then it is really absurd to consider for a moment that oiled rags, old clothes covered with grease and the like, will catch on fire if left alone; such a thing can not be, as we will show at another time.—*Miller and Manufacturer.*

NUTRITIVE VALUE OF BRANNY FOODS.

At a recent meeting of the College of Physicians of Philadelphia, a valuable paper on this subject was presented by Drs. N. A. Randolph and A. E. Rousell. The following are their conclusions:

The experiments of Rubner leave no doubt that a white bread contains more assimilable nutriment than one made from the whole wheat does, but this does not render it a desirable food-stuff for exclusive use. On the contrary, a weaned but still quite young omnivorous mammal thrives better upon an exclusive diet of bran bread than on white, and, presumably, because the earthy and alkaline salts are present in greater abundance in the former, and also because the indigestible constituents tend to give to the intestinal contents that bulk and consistency which are essential to the hygiene of the digestive tract. But, as has been shown by Edward Smith and others, the branny scales are needlessly irritating, and unduly hasten the food but partially digested. An observation worthy to be mentioned in this connection is that of Rubner, who finds that, while the presence of much woody fibre and harder cellulose in the intesti-

nal contents induces the passage of stools containing an excess of undigested proteid foods, the absorption of fats under the same conditions is not materially affected. The end which popular hygiene attempts to effect by the retention of bran in breadstuffs can be better attained by other means. Thus, the nutritive salts of food so frequently lost in ordinary methods of preparation are readily restored by the concentration of the liquor in which meats and vegetables are cooked into a soup stock, as practiced in almost every French kitchen. Again, the various fresh green vegetables used as salads yield in abundance these inorganic food-stuffs, the presence of which we have seen is indispensable to normal tissue activity. A further advantage of these and other succulent vegetables lies in the fact that their cellulose, while efficient in giving proper bulk and consistence to the stools, is, as compared with bran scales, soft and unirritating to the digestive tract. From the facts, old and new, which have been presented, the following deductions appear to us justifiable:

I. The carbohydrates of bran are digested by man to a slight degree.

II. The nutritive salts of the wheat grain are contained chiefly in the bran, and therefore when bread is eaten to the exclusion of other foods, the kinds of bread which contain these elements are the more valuable. When, however, as is usually the case, bread is used as an adjunct to other foods which contain the inorganic nutritive elements, a white bread offers, weight for weight, more available food than does one containing bran.

III. That by far the major portion of the gluten of wheat exists in the central four-fifths of the grain, entirely independent of the cells of the fourth bran layer (the so-called "gluten cells"). Further, that the cells last named, even when thoroughly cooked, are little if at all affected by the passage through the digestive tract of the healthy adult.

IV. That in an ordinary mixed diet the retention of bran in flour is false economy, as its presence so quickens the peristaltic action as to prevent the complete digestion and absorption, not only of the proteids present in the branny food, but also of other food stuffs ingested at the same time.

V. That, inasmuch as in the bran of wheat, as ordinarily roughly removed, there is adherent a noteworthy amount of the true gluten of the endosperm, any process which in the production of wheaten flour should remove simply the three cortical protective layers of the grain would yield a flour at once cheaper and more nutritious than that ordinarily used.

STORAGE AND SHIPMENT OF GRAIN.

Mr. Woodford Pilkington, a well-known English engineer, in addressing his colleagues, recently made the following remarks in regard to the American method of handling grain:

The extended cultivation of grain for export in the United States of America over vast regions of fertile territory has necessitated the invention and employment of special machinery and buildings for its reception, elevation, storage and delivery or shipment.

As a case in point, the daily receipt and delivery of about 20,000,000 bushels of grain in one city alone, like Chicago, has called into operation a character of invention singularly adapted to the object in view, wherein the grain is treated pretty much as a fluid, and capable of being received and discharged in a similar manner. In this way the grain is pumped up and moved along in any direction, from the place of deposit or receipt to the point of delivery, through spouts, shoots and orifices, by means of drag-belt and other appliances, and in troughs termed conveyors, the latter being sometimes used at distances varying from 200 to 300 feet from the main elevator building.

The impetus thus given to the grain trade in states having a large area of production has been of interest to this subject, as affecting the price of wheat and other cereals in the markets of the world. This paper, however, deals only with those mechanical and constructive details needful to the operations set forth in the premises, and not with the harvesting and transportation of grain in its relation to agriculture.

The grain elevator may be aptly described as an oblong house, of varying dimensions, and of from 70 to 80 feet in height from the ground line to the top of the cupola, divided vertically into bins.

The original method of storing in flats or floors, having been inadequate, gave rise to the self-delivering vertical bin system. These, again, suggested the hoisting machinery for filling the bin by elevating the grain to any required height above the bin level; first, for receiving the grain into the garners which discharge into the weighing receivers, and again for delivering the grain, according to the weighing capacity of the receivers, hopperful by hopperful into the bins. These bins are generally 60 feet high above their sup-

ports, and are capable of holding about 5,000 bushels each.

The elevator building is constructed on a series of piers or compound posts of sufficient strength to support it when filled, and the machinery employed for the purpose. They allow the passage in of railway cars, there being generally two sets of ways entering into each elevator building. The supports stand under the corners, and indicate the size and shape of each bin. The intermediate spaces are used for manipulating the bin-spouts and the levers or ropes for opening and shutting the bin valves.

This mode of construction throws the weight of the building and its contents on the points of support, and hence the necessity of care being taken to have piles and piers of sufficient strength under the posts of a grain elevator. In other respects the construction, while being singularly unique, is most simple.

After the level of the bottom of the bins has been reached planks, 6 inches by 2 inches, are laid horizontally across each other, constituting cribwork, which is fastened down by 5-inch spikes, and so bonded as to form laminated walls both for bins and house, dividing it vertically into square subdivisions. An upper story is constructed above the four central rows of bins to contain the "garners" and "receivers," for weighing and distributing the grain into the bins. The grain is elevated up one or more of these bin spaces by a belt and buckets in a tube called a "leg." This passes down below the entrance-floor into a receiving hopper termed a "boot" or "sink," into which the railway cars discharge their loads of grain. Each elevator-leg with its garner and receiver governs a certain number of bins forming its section of the house, generally twelve in number, representing from 50,000 to 60,000 bushels, so that an elevator house with twenty legs of ordinary size would have a bin-capacity equal to 1,000,000 or 1,250,000 bushels. About 20 horse-power is required for each leg, so that a 1,000,000-bushel house would need from 400 to 500 engine horse-power.

MILLING INDUSTRY AND GRAIN MARKET IN RUSSIA.

The milling industry, at present, is principally devoted to filling the demand for home consumption, and consists almost entirely of grinding rye for the bread of the peasants, and the gruel, which plays so important a part in the sustenance of the Russian people. The mills are worked by wind, water or horse power, and, on the larger estates where engines are used, by these, when not otherwise employed.

There is thus a promising field for an improved milling industry in Russia, for the peasant would soon learn that he can do better by selling his grain and buying flour, than to have it ground in the toll mills, where generally one-third of his grain is stolen from him.

Very little has been done, as yet, for exportation of flour, but attention is being directed to this subject. There are already in Southern Russia well appointed mills working for the export trade, three in Odessa, one in Cherson, one in Nikolaiev, one in Sebastopol and one in Tagaurog. Lately good mills have been established in Samara, Saratov, Kasan, Nizhne, Novgorod and Moscow, furnishing excellent flour, which carried off the prize at the Moscow exposition. This city is remarkably well situated for milling on a large scale, an industry that will undoubtedly be developed in time. The greater part of the product of these mills consists of such kinds of flour that find a market in Turkey, Greece and Egypt. An important branch of their business is the manufacture of macaroni grits for the bakeries in South Russia and Italy. For this purpose the best quality of wheat is used, and in such mills hardly any flour is made, because the finest and most nourishing parts of the grain is needed for the macaroni grits.

From 1857 to 1860, the yearly export of flour amounted to 380,000 hectoliters, representing a value of \$775,000, while it now has grown to 1,200,000 hectoliters annually, amounting to about \$2,850,000. Considerable quantities of grits and bran go to North Germany. Of 1,000 pounds flour,

353.2	go to Sweden and Norway.
304.0	" Turkey.
163.1	" England.
24.8	" Austria.
18.9	" Netherlands.
17.4	" Prussia.
9.5	" France.
1.1	" Italy.
107.7	" Other countries.

It is evident, however, that a considerable amount of money is now being used for the benefit of the milling industry and the high millers of neighboring countries, such as Hungary and Austria, are beginning to fear as lively a competition from this source, as is already the case from America.

The means of transportation in Russia have been materially improved since the gen-

eral introduction of railroads. The country, consisting of an almost unbroken immense plain, is crossed by large navigable streams, which facilitate the handling of grain, and these rivers are connected by good canals, well maintained. But transportation from the grain-growing districts to shipping facilities is very difficult and expensive, owing to their great distance from these shipping places and railroad stations and the lack of good roads. The principal river, the Volga, which is connected by canals with Oka, Dwina, Neva, Soota and Don, joins the Caspian and Black Sea to the Baltic and White Sea. In addition to these, the Vistula and the Dnieper are large, navigable rivers.

The bulk of the transportation to the shipping stations along the rivers and railroads can only be accomplished during the winter, when the ground is frozen and covered with snow. Then the Russian peasant is ready with his sleigh at low hire, and thousands of such sleighing parties are organized, for there is nothing else to do on the farm. At the river stations the grain is piled up in sacks in the open air to await the opening of navigation on the rivers in the spring. In the meantime large rafts are made, capable of carrying from 1,000 to 2,000 centnerweights of grain, according to the capacity of the river. The great shipping on the rivers goes north to the seaports on the Baltic. The transportation of a cwt. of grain from Tsaritsin, in South Russia, to St. Petersburg, a distance of about 2,500 miles, costs \$1.20. On the Volga and its tributaries an enormous grain business has sprung up, hardly equaled by that on any of the great rivers in this country.

This movement of grain to the Baltic takes place from a territory extending north from Kharkov and Koorsk and east as far as Tsaritsin, comprising three-fourths of the distance from St. Petersburg to Odessa. The remainder includes the territory tributary to Odessa, and the grain from this part of the country is consequently carried only one-third of the distance which the grain going north has to traverse.

At Odessa commences the Steppe, extending from the mouth of the Dnieper to the mouth of the Don, and having an average width of 95 miles. It is, however, not the dreary desert to-day, that it was only 50 years ago. Numerous settlements have been made and new settlers are daily pouring in for the purpose of raising grain, which in good years, when the necessary rain does not fail, is attended with excellent results.

At the railroad stations, the grain is likewise stored in sacks in the open air; only at Samara special warehouses have been built. In winter the freight rates on the railroads are generally double what they are in summer, since there is no competition with the river shipping and the grain dealer is often compelled, by reason of better market, to make large shipments. Nevertheless, on the whole, the carrying charges on the Russian railroads are extra ordinarily low, owing to the interest guaranty of the government, the cheap transportation of loads on sleighs, and the low wages for labor.

On the railroads which annually transport to the northern seaports 30 to 40 million centnerweights, a cwt. costs about $\frac{1}{2}$ mill per mile. The grain going south, 20 million cwts. annually, has to pay a slightly higher price for transportation, but needs to be carried only $\frac{1}{2}$ of the distance northward. The freight there for a cwt. amounts to not quite $\frac{1}{2}$ mill per mile. About 4,000 miles of railroads have been built solely for grain transport.

Notwithstanding the war of 1877, the railroads did a splendid business on account of the numerous army transports, and because great quantities of grain had to be carried north, as they could not be exported over Odessa, all the ports of the Black Sea being blockaded. The export from the Baltic, therefore, during that year rose to 40,882 million centnerweights.

The territory exporting from Odessa, lies south of Kharkov and Kiev and comprises Bessarabia, Kherson, Podolia, and a large share of Volhynia and Crimea. Lately, however, with the increase of railroads, shipments are frequently made even from this region to the Baltic ports. The transportation to Odessa was formerly accomplished in wagons drawn by oxen over the trackless steppes, and even now these clumsy vehicles are not entirely discarded. Such a wagon will load eight sacks of grain of about 650 pounds, and, with good roads, travel about 10 miles a day. The average distance which the grain is carried, in order to reach Odessa, is 200 miles, for which 25 cents per cwt. is paid. Grain is, of course, transported to Odessa also by way of the Dnieper and from the ports on the Sea of Azov, but by far the greater part is brought by land on the railroads or by wagon.

On the rivers there are over 600 steamboats of more than 50,000 horse-powers, whereof

two-thirds are in use on the Volga, and mostly employed for towing up the river the barges laden with grain. In Rybinsk, 330 miles from Petersburg, the great barges must be unloaded, which yet is done almost entirely by manual labor. There are 6,000 laborers constantly employed in this unloading and re-loading on smaller crafts, and the cost of handling a sack of 300 lbs. is on an average 2 cents. A short time ago, the first elevator was built, which was considered as an immense advance.

FLOUR MILL INSURANCE IN FRANCE.

French millers are apparently suffering quite as much as their English brethren in regard to the insurance of their mills, and the mutual system, or association, seems to offer the only escape from high premiums and indifferent classification of risks. The *Journal de la Meunerie* says that from all time French millers have had to accept the terms of the insurance companies, and whatever improvements may be made in a mill no account is taken of them, and no reduced premium follows their adoption. Quite recently the Syndicate of the French insurance companies agreed to raise the already heavy premiums, applying without the slightest discrimination the same exaggerated tariff to all mills, on whatever system.

The French journal very properly thinks that flour mills cannot be considered ordinary risks; but a classification, under which those adopting every precautionary measure should reap some benefit, is desirable. Modern millers are daily perfecting their machinery, and wood enters less and less into the construction of mills, whilst the use of the electric light is spreading, and the grain is cleaned under conditions much less favorable for the creation of conflagrations than before; nevertheless the reduction of premiums on insurance which these alterations deserve have not been forthcoming for the French miller, so it is not to be wondered at that the latter have in some cases sought to place their risks with English companies. The *Journal de la Meunerie* remarks that it is not just to fix a "Carr" disintegrator as equivalent in risks to eight pairs of stones, nor to proceed by rules of proportion and say that if one pair of stones pay so much, two must pay so much. Consequently French millers are urged to become their own insurers, the only mode of obtaining that revision of the present tariff in France, which is so desirable and necessary.—*Millers' Gazette*, (London.)

OPENING OF GREAT GRAIN REGIONS.—Russia has resolved to develop her system of railway communication on an enormous scale, and for this purpose has just contracted a loan of \$75,000,000, to be expended during the next few years. India has already built lines of railway penetrating the furthest provinces. Australia has also made long strides in the same direction. Next in order is the Argentine Confederation, in South America, which is building four additional trunk lines of railroad at a cost of \$28,000,000, to connect Buenos Ayres, her principal seaport, with the vast granaries opening up in the pampas of the interior. In every case the ultimate purpose is to overcome all impediments in reaching the central grain markets of Europe. And, in spite of all this, says the *British Trade Journal*, American grain speculators continue their efforts to artificially maintain the price of wheat, as though there were a great deficiency in the supply of the world, and the nations would eventually have to come to them begging the privilege of being allowed to purchase some of their surplus.

A FABLE FOR FREE TRADERS.—A wolf espied a goat standing on a cliff quite out of his reach, and munching the herbage that grew on the summit level. "Come down here, my friend," said the wolf; "it is contrary to the principles of economic sociology that you should get your living in such an exclusive and uncommercial way. Besides, you will find it much better feeding down here, where the grass is both more nutritious and more abundant."

"Much obliged for your invitation," replied the goat, "which, however, I will decline with thanks. I am doing very well where I am, and, besides, I suspect that you are more solicitous about your own dinner than mine."

No carpenter in a city now thinks of lugging about a 300 pound chest of tools, consisting only of molding, sash and match planes, as many in the country did in former years, in addition to the ordinary chest of tools which came into everyday use. Nowadays fine office and store fixtures, and much other work, comes from the mill in such shape that a couple of ordinary clever workmen, with only a shoulder box full of tools between them, will put it up more rapidly than the thoroughly trained carpenters of old times after making the fixtures by hand. The proportionate number of good carpenters is decreasing from this, and the fact that when a man finds himself good at any particular

branch of the business, he follows it in preference to any other, and finds it more profitable to do so.

ITEMS OF INTEREST.

The great importance of starch in the vital processes of plants and animals, as well as its interesting chemical behavior, has caused thorough investigations of its properties to be made from time to time. One of the latest analyses of wheat starch gives the following result: 24.143 per cent. water, 0.061 per cent. ashes, 1.1 per cent insoluble matter and 78.697 per cent. pure starch. Treating the starch with diluted acids changes it to sugar, which is produced in greater volume than the original starch, so that, in making sugar of wheat starch, 100 parts pure starch gave 111.11 parts grape sugar, and out of 162 parts pure starch were obtained 180 parts grape sugar. A treatment of starch with diluted acetic acid results, after four hours, in a kind of sugar, known as dextrose; but if the influence of the acetic acid is continued, this dextrose is changed into grape sugar. These changes are of the greatest importance in baking.

The 12th international grain and produce market took place in Vienna on the 25th and 26th of August, in the rotunda of the palace of the World's Exposition, in connection with a barley exposition, arranged by the society of Austrian malt manufacturers, and a general congress of Austrian millers and mill owners. According to program, the 25th was to be devoted to crop reports from all the grain producing countries in Europe, India and America, and the 26th to business proceedings.

Owing to the excessive rates charged by the regular insurance companies for risks on mill property, the mill owners of France are agitating the question of establishing a mutual insurance company among themselves.

The officials of Arles in France, who are compelled to remain in the city, are in a sad plight. All the inhabitants have fled, on account of the cholera, including the bakers, and the butchers also having now followed their examples, there is danger of the rest dying from lack of the necessities of life.

The first export of flour from Michigan, was made in the year 1827. Miller & Jermain of Monroe, shipped 200 barrels of flour to the East.

OCTOBER CROP REPORT.

WASHINGTON, Oct. 10.—The October returns of corn average higher for condition than in the past five years, but not so high as in any of the remarkable corn years, from 1875 to 1879, inclusive. The general average is 93, which indicates about 26 bushels per acre on a breadth approximating 70,000,000 acres. The region between the Mississippi and Rocky mountain slopes again presents the highest figures, which in every state rise a little above the normal standard of the full condition. No state east of the Mississippi returns the condition as high as 100. The lowest figures are, in West Virginia 73, Ohio 74, Louisiana 74, Texas 80 and South Carolina 83. The reduction was caused by drought. There is complaint of drought in the Ohio valley, and inter-Atlantic and Gulf States, but not sufficiently severe to make the reduction serious. The yield of early-planted corn is everywhere matured. Late plantings in the Southern States suffered for want of summer rains, and will be light and not well filled. Very little injury has been done by frosts. There was frost in Vermont Aug. 25, and in several border states about the middle of September, with slight injury to late corn. The damage by chinch bugs and other insects has been slight.

THE WHEAT CROP.

The wheat crop will exceed that of last year by about 100,000,000 bushels. Threshing is slow and late, with results thus far confirming the indications of former reports. The yield per acre will average about 13 $\frac{1}{2}$ bushels. The quality of the present wheat crop is generally very good, especially in the Eastern and Middle States, on the western slope of the Alleghenies, Michigan, Wisconsin and Minnesota. Some depreciation in quality is noted in Indiana, Illinois, Iowa, Missouri and Kansas. The average for the entire breadth is 96.

The indicated yield of rye is about 12 bushels per acre. The quality is superior. The yield of oats is a little above the average, yielding about 27 bushels per acre, and making the crop approximating 570,000,000 bushels. The quality is good. The barley crop will make a yield of nearly 23 bushels per acre, and a product exceeding 50,000,000 bushels of average quality. The condition of buckwheat averages 87, indicating a crop slightly under the average.

The condition of the potato crop is represented by 88 five points lower than in October last year, two points lower than in 1879 and 1882, and the same as in 1880.

UNITED STATES MILLER.

E. HARRISON CAWKER, EDITOR.

PUBLISHED MONTHLY.

OFFICE, NO. 124 GRAND AVENUE, MILWAUKEE.
SUBSCRIPTION PRICE—PER YEAR, IN ADVANCE.
To American subscribers, postage prepaid..... \$1.00
To Canadian subscribers, postage prepaid..... 1.00
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[Entered at the Post Office at Milwaukee, Wis., as second-class matter.]

MILWAUKEE, OCTOBER, 1884.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER. You will thereby oblige not only this paper, but the advertisers.

CAWKER'S AMERICAN FLOUR MILL AND MILL FURNISHERS' DIRECTORY FOR 1884, published by E. Harrison Cawker, of Milwaukee, Wis., and sold for (\$10.00) ten dollars per copy, is now ready for delivery. It shows the result of an immense amount of labor, careful inquiry and studious attention to details. It is without doubt the most accurate trade directory ever published, and will be of untold value to those desiring to reach the milling industry of America.

We glean from this neat volume of 2 pages containing no advertisements, that there are in the United States of America and our neighboring Dominion of Canada 25,5 flouring mills, taking them as they go great and small. The work indicates in about 10,000 instances the kind or kinds of power used by the mills, and the capacity in barrels of flour per day. It further indicates cornmeal, buckwheat, rye-flour and rice mills. It shows the number of mills in the various states and territories of the United States as follows: Alabama 45; Arizona 17; Arkansas 343; California 222; Colorado 54; Connecticut 288; Dakota 81; Delaware 98; District of Columbia 5; Florida 66; Georgia 631; Idaho 21; Illinois 1123; Indiana 1089; Indian Territory 14; Iowa 790; Kansas 489; Kentucky 713; Louisiana 61; Maine 28; Maryland 353; Massachusetts 340; Michigan 846; Minnesota 487; Mississippi 386; Missouri 1025; Montana 21; Nebraska 25; Nevada 13; New Hampshire 182; New Jersey 442; New Mexico 32; New York 1902; North Carolina 848; Ohio 1443; Oregon 145; Pennsylvania 3142; Rhode Island 51; South Carolina 274; Tennessee 801; Texas 73; Utah 11; Vermont 247; Virginia 781; Washington Territory 61; West Virginia 447; Wisconsin 777; Wyoming 2.

In the Dominion of Canada we find the record as follows: British Columbia 17; Manitoba 54; New Brunswick 198; Nova Scot 12; Ontario 1160; Prince Edward's Island 39; Quebec 531. Total 25,5.

Taking the work throughout, and it is highly interesting to all concerned in the trade, and we take pleasure in recommending it.

See Page 90.

A copy of Ropp's Calculator and the UNITED STATES MILLER will be sent to any address for one year for \$1.00.

The New American Dictionary and the UNITED STATES MILLER sent postpaid to any address in America for \$1.60.

That valuable book "Moore's Universal Assistant and Complete Mechanic" and a copy of the UNITED STATES MILLER for one year will be sent to any address in America for \$2.75. Order now.

THE inevitable presidential election has come around again, and we trust that all of our readers will vote. We make no suggestions as to who you should vote for, but be sure and go to the polls on election day and vote for somebody.

"FOOLS will walk where angels fear to tread," is an old and true proverb, and still inventors of milling machinery will insist upon placing new inventions on the market. This is well. But how many enthusiastic ones will come to grief, "Goodness only knows," and few of the unsuccessful will "give themselves away."

THERE has been much discussion during the past five years, among many prominent millers, whether the roller system in milling would ever give place to the disc system. We do not care to express an opinion; but we do not hesitate to say that we have seen as fine work from disc mills, as ever was produced. It is, however, a question to be decided by experience whether the disc system is practical and economical.

GEO. T. SMITH, of the G. T. Smith Middlings Purifier Co., paid us a visit during the past month. We were so unfortunate as to be out of the city until a few hours before his departure. It is rumored that his Centrifugal Reels have met with marked success in Milwaukee, against very strong opposition. Our readers are probably more able to judge of the merits of Centrifugals than we are, but we certainly have heard some very warm praises for SMITH's, in Milwaukee.

THE estimates on the wheat yield are, as yet, not at all reliable. The Government es-

timates, or those of other parties paying special attention to the yield of wheat, may be within twenty millions. THE UNITED STATES MILLER made a prediction last May that the wheat yield of this country for 1884 would be at least 520,000,000 bushels. From present information we have no hesitation in saying that we believe the yield will exceed 550,000,000 bushels.

"The Great Empire City, or High and Low Life in New York," and the UNITED STATES MILLER for one year will be sent postpaid to any address on receipt of \$1.00

OUR VISITORS.

Among the visitors calling at the UNITED STATES MILLER office, during the month of September, were the following:

C. B. Shove, Esq., of the Manufacturers Mutual Insurance Co., of Minneapolis, Minn.

P. G. Monroe and Samuel Monroe, of the *Journal of Railway Appliances*, of New York.

W. H. George, Esq., of the Stilwell & Bierce Mfg. Co., of Dayton, O.

Jno. Brining, Esq., of the Geo. T. Smith Middlings Purifier Co.

Mr. F. Printz, of the Milwaukee Dust Collector Co.

SPECIAL INDUCEMENTS TO SUBSCRIBERS.

If you are not already a subscriber to the UNITED STATES MILLER, now is your time to subscribe. We call your especial attention to our announcement on page 72. It may be summed up as follows:

We will send the UNITED STATES MILLER post-paid to any address in the United States or Canada for one year and a copy of Ropp's Calculator in plain binding for \$1.00, or a No. 3 Calculator and the paper for \$1.50; or a copy of Ogilvie's Popular Reading No. 3 and the paper one year for \$1.00; or the books entitled "The Great Empire City" or "Fifty Complete Stories" and the paper for one year for \$1.00; or the "New American Dictionary" and the paper for one year for \$1.60; or "Moore's Universal Assistant and Complete Mechanic" and the paper one year for \$2.75. Our readers should not fail to take advantage of these offers, which remain open until we announce to the contrary in our columns. All remittances must be made by postoffice money order or registered letter. Remittances made otherwise will be at your own risk.

THE HALTEMAN FAILURE.

The failure of I. Q. Halteman & Co., mill-furnishers, was announced last week, but did not occasion much surprise, it being pretty generally understood for some time that the firm was in an embarrassed condition. The direct cause of the suspension was the attempt to transact a large business on a limited capital, bad debts, and inability to compete with firms having large capital. The assignment was made to W. E. Fisse, Jr., assets placed at \$15,000; liabilities not stated, but supposed to be sufficiently large as to preclude the estate paying dollar for dollar.

The late firm succeeded the firm of A. K. Halteman & Co., which did a large business in fitting out mills and factories. In 1878, A. K. Halteman & Co. assigned, and I. Q. Halteman and George C. Goetting bought the assets of the concern at assignee's sale for \$10,000, of which they paid \$1,000 in cash. This \$1,000 was the total capital of the two partners, but on it they built up quite a flourishing business, enlarged their works and seemed on the high road to prosperity. As fast as they made any money, however, they invested it in the business, thus leaving themselves almost wholly without cash capital. October 2, 1882, I. Q. Halteman bought out his partner for \$6,000 and has ever since continued by himself. Many of his best workmen, however, left his employment to start in business on their own account, and this crippled him considerably. Then he lacked the money necessary for the purchase of improved machinery, and laboring under these disadvantages he was forced finally to suspend.—*St. Louis Miller.*

Many serious delays often occur in mills and factories where belting is used by trusting the supervision of the belts to incompetent persons. It should be the rule of every careful manufacturer to employ none but experienced machinists to manage the belts and to be entirely responsible for them. A competent man will not have a belt of greater length than is necessary; for, as is well known, long belts sag heavily and cause so hard a drawing on the shafts as to increase the friction on the bearings.

The motion, too, is unsteady, which will rapidly wear out the machinery and belts. In the selection of pulleys, it has been suggested that small ones should be used where consistent, since the belt adheres much better at quick speed than when large pulleys are used and the speed is lessened. It is not best to so place the pulleys that the belt hangs horizontally, but when it is necessary to do so, the belt must be kept tightened or a constant slipping will prevent the pulleys from doing

the work. Where endless belts are not used the motion should run with the lap. It is economical to place the grain side next to the pulley, as the belt is better protected and less liable to crack, besides furnishing a smoother surface to the pulley and being less liable to slip. An experienced machinist says that he always uses castor oil to make the belt hold. It excludes the air from between the belt and the pulley better than animal oils, and although it is more expensive, he has found that it preserves the belt longer than any other oil and keeps the leather more pliable.—*Wood and Iron.*

AN INVENTOR'S HARD LIFE.

Mr. Daniel Drawbaugh, who claims to be the original inventor of the telephone, was in the court room of the United States Circuit Court, during the argument on Friday before Judge Wallace, in the great suit of the American Bell Telephone Company against the People's Telephone Company.

Mr. Drawbaugh is of small stature, with a bald head, a ruddy face, aquiline nose, wears a moustache that is nearly gray, and has a quick, nervous, restless manner. He moved about impatiently as Mr. Lysander Hill, his counsel, detailed the history of this inventor, which, like that of many men of his class, is a story of poverty, of hardship and a constant battle for fortune.

In the speech of Mr. Hill the following facts in reference to Mr. Drawbaugh's life were brought out: He was born in 1827, in the village of Eberley's Mills, Milltown, Cumberland County, Pa. He attended school a part of five winters, up to the time he was sixteen years old. When about twelve years of age he made a clock and an automatic machine for sawing wagon felloes, and continued throughout his life to manifest a genius for mechanical inventions. During the years 1859 and 1860 he conceived the idea of transmitting articulate speech electrically through a telegraph wire, and he started to make a machine through which, it is alleged, conversation could be carried on at a distance of twenty miles. This was done by the use of what is known as the "carbon telephone," which is constructed on the same principle as the Bakel transmitter. Some of these instruments, counsel said, were made as early as 1867. Prior to the war Drawbaugh invented a machine that was largely used for agricultural purposes in the South, and when the war broke out he had a large amount of money owing to him that he was not able to collect. He was therefore obliged to go into bankruptcy.

From 1869 to 1880 he was in extreme poverty, with a large family, and his only source of income was payment for the doing of odd mechanical work in the houses and on the farms of his neighbors. The latter said of him that his hobby was electricity and that he was a man of great inventive genius, but it was frequently very hard work for him to borrow a dollar from any one of them.

[Special for the U. S. MILLER.]

THE FLOUR AND GRAIN INTERESTS OF PENNSYLVANIA.

The increase in the wheat market in the visible supply is less than 400,000 bus., and that is more than offset by a decrease of 2,400,000 bus. in the amount of wheat on passage from all parts of the world to Great Britain and the Continent. The receipts of winter wheat at interior centers have not been large for the time of year, and the movement of spring wheat thus far has disappointed expectations. The general tenor of reports from the country, particularly from the wheat growing districts of Pennsylvania—Lancaster, York, Dauphin, Lebanon, Berks, Bucks, Lehigh, Northampton, Montour, Snyder, Centre, Union, Lycoming, Clinton, Crawford, Washington and Westmoreland Counties, indicates an unwillingness to sell at ruling prices, and in many sections plump bids of higher figures than have been obtainable in the eastern markets, have been refused. The National Bureau report, indicating a yield of 500,000,000 bus., has been a disappointment to many who had confidently anticipated a larger estimate. All these features of the situation have pointed to higher rather than to lower prices; but, as the actual course of the market attests, they have been powerless against the general lack of speculative support and the continued apathy of foreign buyers. The clearances from Atlantic ports have aggregated in the neighborhood of 200,000,000 bus.; but these shipments have been largely in execution of contracts made several weeks ago, a good many of which are still unfilled, and will maintain a liberal outward movement for the balance of this month. New business has been extremely difficult to accomplish in the face of weak and declining markets at home and abroad, and the steady depreciation of values has caused a general pressure to realize on the part of the disgruntled "longs," who have been holding on for weeks past in the hope that something would turn up to give an upward impetus to the market. Notwithstanding the

low prices confidence is still at low ebb, and speculation is largely confined to the regular habitués of the exchanges. The corn markets have also sharply declined. The short interest in old crop options has been mostly squeezed out by the recent advance, and prices have sagged off on the near deliveries 3½ to 4 cents in New York. The splendid crop prospect has caused free selling of late months in all markets, but speculators hesitate to put out contracts for October in the eastern markets or for delivery this side of December, on the seaboard, owing to the meagre stocks and the fear of another squeeze by the engineers of the late bull movement. These parties still control the bulk of the supply of the contract grade, and the break in prices within a short time is regarded by many operators simply as a lure to sellers. Export trade in corn is almost at a stand-still, owing to the relative cheapness of Danubian corn.

The flour manufacturing industry is in a remarkably prosperous condition. The extensive steam roller mill of Nathan Sellers, at Sixty-fifth and Market streets, Philadelphia, has been completed, and is in first-class running order. The production of the celebrated grades of Milbourne and Rosa Belle flour weekly is very large and has already secured a heavy sale not only in Pennsylvania, but good shipments are regularly made to foreign ports, the flour being carried from Philadelphia to Liverpool by the steamers of the American line. Elsewhere in the Keystone State, as has been learned in interviews with prominent members of the Pennsylvania State Millers' Association, the producing interests are generally in a reasonably fair and satisfactory condition, while profits appear to be about right.

In the central portion of the State much enterprise is being displayed by millers who have hitherto used the most crude methods of making the staff of life. At Watsontown, Northumberland County, the well and favorably known firm of R. M. Griffey & Co., proprietors of the old established "White Deer Mill," have greatly improved their old mill. Besides this change the firm intends to build a new structure and will put in the entire machinery of a new process roller mill, as the popularity of their products has been discovered by the consumers in central Pennsylvania to such an extent that it has become impossible to supply the demand without increasing the capacity. With characteristic enterprise Griffey & Co. ordered the purchase of the necessary appurtenances, and machinists are now at work putting in the new machinery, which came from the works of a celebrated western flour milling machine firm. Over \$5,000 worth of machinery has been contracted for, and it is expected will be in complete operation some time early this fall. The success of the "White Deer Mills" is very gratifying to the proprietors, and proves conclusively the efficiency of the head miller, R. M. Musser, who certainly understands thoroughly the art of making first-class flour.

FLOUR GRADING.

As time moves on we hear more about the grading of flour to uniform standards, and we will say right here and before time moves any farther, that we don't like the idea. The scheme will be worked, or rather attempted, by the dealers of the larger markets. Their argument will be something like this: "If we can establish various grades we are not tied to particular mills or particular millers. All we have to do is to educate the millers to these standards, then when we want to buy we can bring about a competition through the mills upon an intelligent basis. If we want 'Choice' we will not have to telegraph for quotations on one man's 'Snow King,' and another's 'White Lily,' and somebody else's 'Best,' but we merely ask for figures on 'Choice.' Thus we have a uniform basis for a spirited competition, and the shortest pole knocks the persimmons." This picture is a little overdrawn, but as a caricature it has a basis of truth in it. The best system of grading and inspection we have in this country is in St. Louis, and as we see it, it is about as good as can be, and at the same time it does not serve any such purpose as our imaginary broker would wish. It is all right on low grades, but even here mention is made of good supers, and all of that, and within the margins embraced by this grade we frequently hear of a disturbance. This being so with low grades, how much more would it be so with the high? There is something more than a mere matter of grade to flour; there are subtle qualities which cannot be uniformly judged, as they cannot be described. Such qualities are of value to the baker. Flour may be graded as to color, and approximately as to strength, but when it comes to the nicer distinctions, which can only be appreciated by the user, such standards cannot be fixed or even indicated. The lines of distinction are too fine. They are like distinctions in character—a little is a great deal.—*Modern Miller.*

WHERE IS THE OLDEST PRINTER WHO WORKS REGULARLY?

The following is from a correspondent of the *New York Sun*, who writes from Erie, Pa.:

MORE THAN FIFTY YEARS AT THE CASE.—Western newspapers are boasting over a printer in the employ of the San Francisco *Chronicle*, who has completed half a century of a 'sit' at the case. There is a printer in Erie, named Michael J. Quinn, known among the craft as 'Father Quinn,' who has a longer string than the Golden Gate man. Father Quinn was apprenticed when a lad to a printer in the city of Waterford, Ireland, in 1830, and, after serving his apprenticeship, got a 'sit' on the London *Times*, and had several 'fat takes' of the account of the Queen's marriage notice. Coming to America, Mr. Quinn got cases on the *New York Evening Post*, which he held for seven years. During that period he had the personal acquaintance and confidence of William Cullen Bryant, Parke Godwin, John Bigelow and others. Turning his face westward, he came to Erie and served nearly twenty years on the *Erie Despatch*. He now holds cases on the *Erie Daily Herald*, and, although almost 70, uses his eyes without the aid of glasses. Father Quinn's years of toil present startling features in the way of figures. For instance, assuming a fair average rate of speed, taken from his best, at 10,000 ems, and his rate of 5,000 ems at the present day, giving 7,500 ems for an average, it will be found that the enormous amount of 119,340,000 ems of matter has been set up by this compositor during the past half century or more. In setting this it was necessary to handle over 358,020,000 pieces of metal twice over, including distribution."

There has been employed, the past two years, in the establishment where the **UNITED STATES MILLER** is printed, (Riverside Printing Co.), a veteran of the typographic art, named Elijah Rawson, who commenced working at the business at Windsor, Vt., in the office of the *Vermont Chronicle*, in the year 1828. During his apprenticeship he assisted in setting the types for President Jackson's first inaugural address,

After three years [1831,] he went to Boston (stopping on the way for short periods at Bellows Falls, Vt., and Fitchburg, Mass.), and finished his apprenticeship in 1833. He next spent a summer at Brooklyn, Conn., working in the office of a paper of which Wm. H. Burleigh was both editor and a compositor; Mr. B. that summer became a brother-in-law of Wm. Lloyd Garrison. In the autumn he went to Hartford, Ct., but not finding employment there, went up the Connecticut River in the manner of the ancient pilgrims, till he came to Claremont, N. H., where he remained most of the winter. He next found employment at Middlebury, Vt., where he remained till 1838, (with the exception of a short time, when in company with G. A. Tuttle, he attempted to carry on a printing office at Castleton, Vt., and failed,) when he left, and after stopping a few weeks at Burlington, Vt., he went to Plattsburgh, N. Y., where he was employed for two years. In 1841 he went to Johnson, Vt., and worked two years, and in 1843 went to New York City, and after about two years residence there, returned to Vermont and spent the years 1845-'50 in editing and publishing a newspaper at Irasburgh, Orleans Co. He then, after working short terms at Brandon, Vt., Whitehall, N. Y., and Rutland, Vt., went to Burlington, Vt., in 1852, where he lived till 1882, with the exception of about five years, at St. Albans, Montpelier and Hyde Park, Vt., and Keeseville and Champlain, N. Y.

He acted as foreman and local editor at Burlington, Vt., Keeseville and Champlain, N. Y. In addition to his editorial labors, he has, from time to time, written articles which have been published in newspapers, against intemperance, immorality, irreligion, etc.

In his business he has worked from the manuscripts of the following persons, who have acquired fame as authors: Rev. Hosea Ballou, of Boston, one of the early preachers of universal salvation; Grant Thorburn, Epes Sargent, Edgar A. Poe and W. H. Herbert (Frank Forester), of New York; Gov. Slade, of Middlebury, while a Representative in Congress, whose last public services were in behalf of a society whose object was to send school teachers to the West; Charles G. Eastman, John G. Saxe, Bishop Hopkins and Prof. Zadock Thompson, of Burlington; and A. A. Earle, formerly of Irasburgh.

Mr. R. is not disposed to brag of fast workmanship, never having been able to complete 9,000 ems a day, and cannot now complete 5,000 ems; indeed, for that matter, he thought it prudent to be temperate in working as well as in eating and drinking, because he has an unusually slender constitution, never weighing more than about 130 pounds; but yet he has now no recollection of being confined to the house by sickness a week in his life.

When Mr. R. left Vermont, over two years ago, he left a senior in the business, at the case, in the person of Mr. Charles Severance, in the office of the *Vermont Chronicle*, at Montpelier; whether Mr. S. is still living, and working regularly, he thinks is doubtful. A year since an item was published in the newspapers concerning a Mr. Eaton of Danville, Vt., who was about 80 years old, and at that time worked regularly at the case. If there are men who have worked longer at the "art preservative of arts," than the individuals here mentioned, the members of the craft would be interested to read their typographic history.

Mr. Rawson is at present, at the age of nearly 72, stopping at his son-in-law's residence, in Milwaukee, and expects, in the near future to go to his son's home; and has hopes that he will be able to set types and write for the public to read, for some years to come. He makes little use of glasses—and needs them only when reading small print and working with small type—(nonpareil and smaller).

NO. 2 RED WHEAT AT NEW YORK.

The New York Produce Exchange did a good day's work last week when they re-established the grade No. 2 red winter wheat on a higher level. The result is the outcome of a protracted struggle between two factions, and the exchange is to be congratulated that the victory is on the side of sound wheat. The specification of what No. 2 red wheat (contract delivery grade) should consist of, included "dry, sound and reasonably clean" wheat, but was rendered of no account by the existence and toleration of guides for inspection known as samples of "the bottom of the grade." These samples were supposed to represent the poorest quality of wheat that could be allowed to pass as No. 2 red, and included so much dirt, a little buckwheat, a little barley, some long and some short berries, and, in short, was a conspicuous mixture of a good deal else than wheat. These samples were sent all through the west to the larger shipping points where it soon became the practice to grade the good wheat received down as low as the New York samples before sending the grain forward. This "science"—that of grain-mixing—has proved a very profitable employment, and a good number of firms, conspicuously at Buffalo and at New York, have made a great deal of money by judiciously mixing a boat-load or two of inferior wheat with five or ten boat-loads of excellent grain, and thus making the whole marketable as No. 2 red, because of the mixture's barely reaching the type-sample of "the bottom of the grade." This was, of course, nothing more nor less than adulteration of grain. Its practice, while open to condemnation, has not reflected otherwise on those who practiced it because it was done openly and aboveboard. The very rules of the exchange encouraged it by the establishment of the type-sample of "the bottom of the grade." The natural outcome of the continued indulgence in sales of and speculation in adulterated grain have been met with. Foreign buyers of American wheat have learned to shun grain offered as "New York inspection" and have demanded St. Louis, Toledo, Baltimore or New Orleans inspection instead.

This has reflected on New York's export trade in that cereal and suggested the phrase "New York's gamblers in rotten grain," in which there has been so much truth as to compel admission of the charge by the friends of "the bottom of the grade" method of inspecting. On this point it may be explained that the foreign substances mixed with the grain when the grading takes place are likely, after long storage, to cause the wheat to heat quicker, and thus create unsoundness. In January last it is charged that 1,500,000 bushels posted here as unsound became so through this evil of adulteration. By the action taken, after hearing majority and minority reports from the grain committee and the joint advisory committee appointed to consider the re-establishment of the grade (No. 2 red), the report (majority) was adopted that No. 2 red winter shall conform to the following description: * * * "Shall be sound, dry and reasonably clean, weighing not less than 58½ pounds, Winchester standard, and shall not contain over 10 per cent. of white wheat." The weight gauge was added to the old nominal type of No. 2 red by this, but the master stroke consisted in the abolition of the type-sample "heretofore known as the 'the bottom of the grade.'" This action was materially assisted, of course, by the much better quality of the crop of wheat grown in 1884 than that of the previous year and by the very small stocks of the latter remaining in store here. To no others is more credit due for the important change made than to Messrs. H. T. Kneeland, Bingham Brothers and Power, Son & Co. The minority party, or those who upheld and still claim an advantage in the employment of the "bottom of the grade sample," appear to base their view on the evident superiority of an absolute sample against which or toward which grading can be made. As now arranged, they allege that the standard is capable of various constructions, and the use of absolute standards and weights by the ancients is cited as precedent. Whether this claim be admitted or not, one of the largest firms of grain receivers, known as mixers, grants that the type-sample of the "bottom of the grade" has been too low. To the layman in such matters a "bottom of the grade" sample on which to sell, as against clean grain purchased, is in itself open to question on the ground of commercial morality. It needs no argument to prove that it

sets a premium on furnishing an inferior compound. But the better sense of the exchange has asserted itself, and there is reason to believe that the New York standard No. 2 red wheat will hereafter be sought instead of avoided in the markets of the world. —*Bradstreet's, Sept. 6.*

A TRUE ROMANCE OF A WISCONSIN MILLER.

A Wisconsin miller, located at no great distance from Madison, has recently ended a rather romantic life, many particulars of which have been given to us by a friend. Many years ago, when the gold fever was at its height in the Golden State, California, he went thither, a bachelor. He met with fair luck financially, and after a few years' sojourn fell in love with a 'Frisco lady and soon after married her. The result of the marriage was a son and a daughter. After a time the miller and his wife had some bitter quarrels, and finding his domestic relations very unpleasant, he "jumped the town," as the saying goes, and after considerable wandering finally located in a Wisconsin village. After establishing himself in business, he married a very worthy lady and prospered. By his second wife he also had a son and daughter. His daughter is now grown to be a very handsome and intelligent lady. One day not long since she went to the post-office to get the mail, and among her father's letters noted one from San Francisco, directed in a lady's handwriting. She said nothing, but delivered the letter to her father. Her curiosity was excited, and having occasion to brush her father's coat a few days afterwards, she saw the letter now opened, and could not resist the temptation of reading it. The contents tended to show conclusively that the lady who had written it was the first wife of her father, and the terrible results to her and her brother and mother, impelled her to go to her father and tell him what she had learned.

He admitted that it was true and implored her not to mention it, and told her that he had been making arrangements to have everything made right and satisfactory soon. She agreed to keep quiet. A few days after this the miller shot himself. Shortly afterwards his valise with a few things packed in it, was found hid in the hay in the barn, and it is supposed that he had, in the first place meditated flight. It is now said that the California wife is on her way to Wisconsin to claim the fair estate that the unfortunate miller had made in Wisconsin.

DRINKING CEREMONIES.

The custom of touching glasses prior to drinking healths is very common in this and many other countries, and especially in Germany. It is curious to trace how this custom has prevailed and still exists, even amongst savage tribes. To drink from the same cup, and eat off the same plate was one of the ways in which the ancients celebrated marriages and the wedding feast continues to be not the least important of the marriage ceremonies to this day. The Indians of Brazil retain a custom of drinking together a little brandy, as a sign that the marriage is concluded. In China similar customs are met with. In the mediæval banquets of Germany it was the custom to pass a "loving cup" from hand to hand, but this gradually necessitated that the cup should be of enormous size, and thus smaller cups or glasses were adopted, and the old custom was conformed to by the drinkers touching their glasses before drinking. The ceremony attending the passing and drinking out of the loving cup, as practiced at our great city festivals, and at some of our college halls, is said to have arisen from the assassination of King Edward. It was then the custom among the Anglo-Saxons to pass around a large cup, from which each guest drank; he who thus drank stood up, and as he lifted the cup with both hands, his body was exposed without any defence to a blow, and the occasion was often seized by an enemy to murder him. To prevent this the following plan was adopted: When one of the company stood up to drink, he required the companion who sat next to him to be his pledge—that is, to be responsible for protecting him against anybody who should attempt to take advantage of his defenseless position; this companion stood up also, and raised his drawn sword in his hand to defend the drinker while drinking. This practice, in a somewhat altered form, continued long after the condition of society had ceased to require it, and was the origin of the modern practice of pledging in drinking. In drinking from the "loving cup" as now practiced, each person rises and takes the cup in his hand to drink, and at the same time the person seated next to him rises also, and when the latter takes the cup in his turn, the individual next him does the same.—*Brewers' Guardian.*

tion of wheat. This increase is going on steadily, so that even the cotton states are far from being dependent on that staple as a crop. It is evident to the most careless observer that the condition of the South is improving rapidly, much more so than any other portion, at the present time. The large and increasing investments in industrial enterprises, and the activity in railroad construction, demonstrates that the Southern States are making giant strides to prosperity, and importance. It is apparent, that in the South from the favorable condition everywhere seen, there is the opportunity for an industrial growth more rapid, sound, and permanent than exists at present in sections hitherto deemed the most progressive.

The milling interests of the South (in speaking of the South I refer to that portion south of the Ohio and east of the Mississippi) until very recently were of small proportions, compared with the prominence it occupies to-day. It was more or less crippled by the advent of new process milling; being slow to adopt new systems, the demand was supplied from the North and West. The Southern Millers, however soon awakened to the fact, and began to place their mills in a position that would enable them to compete with their brethren in the North. Prior to the year 1880, there was not what could be called a roller mill in the South. About that time Mr. John McCann, of Nashville, Tenn., the first advocate of new school milling in the South, decided to build a new and complete roller mill. The era of improvement began from the successful starting of this magnificent structure, until to-day the city of Nashville alone, can boast of having a number of the most complete and successful mills in the world.

Incidentally I may say, too much credit cannot be given Mr. McCann, who was the first to take a decided stand in that section, as an advocate of new school milling. His most intimate friends contended it could not be accomplished; however he proceeded to carry out ideas formed only after careful study and investigation. He can now point with pride to the results of opinions which he held at that time. The effect produced by the mill referred to above acted as an incentive, and at the present time, there are a large number of thoroughly equipped mills throughout the Southern States, and to which yearly additions are being made. One of the great drawbacks to Southern millers was a scarcity of wheat, however, this is being rapidly overcome. The yield this season shows a large increase over former years, which is legitimate. Producers realize and feel the demand which is growing and will naturally respond to it, and I see no reason why millers of the South should not supply the entire territory south of the Ohio. They need not stop here, their facilities for exporting if not at the present time, soon will be equal if not superior to those possessed by Western millers. The flour markets of the South until a short time ago were controlled by and supplied from the North. This trade was regarded as very valuable, as well it might be, right at home, accessible by water and rail; good prices were always obtained; this, however, is now changed, being supplied at home with a product which has no superior. When we consider how quickly millers of the South responded to the public demand for a superior article of flour, and the radical changes necessary to accomplish it, it would seem that a new spirit of enterprise had seized them. If we look at the State of Kentucky, which had but one roller mill two years ago, and should pass through it now, we would see roller mills on every hand, turning out a product second to none, operated and controlled by a class of men who are determined to keep abreast of the times. This spirit of improvement is everywhere apparent, and although there is not that unlimited water power as at Minneapolis, there is in its stead great deposits of coal with which to generate power, which, although artificial, is now considered preferable. It is admitted Southern millers have progressed more slowly than those of the North, but their progress has been solid, and I feel safe in stating the milling interests of the South are healthier to-day than those of the West. In other industries also the progress has been little less remarkable. The Southern States enjoy, of course, a practical monopoly in the production of American cotton, and it would be foolish to institute comparisons with that branch of agriculture. But the flour mills of the South, principally in Kentucky, Tennessee, Georgia and the Carolinas, have made rapid strides toward equality with those of the North and West. It is to be hoped that the attention given the Southern States in the past two or three years will not lead to the generation of a speculative rush of the kind whose inevitable end is a financial collapse. Should it not do so we may look forward to the South with the assurance that it will make great and lasting progress within the next few years.

[Written for THE UNITED STATES MILLER.]

THE MILLING INTERESTS OF THE SOUTH.

Throughout the South there has been of late years a marked increase in the cultiva-

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Best Middlings Purifier and Rolls MADE IN THE WORLD TO-DAY.

Our system of Separations, Centrifugal Reels, Bolting and Scalping Chests; our Mill Irons, Bolting Cloth, Supplies, etc., *as good* as the world affords. Millers wanting Improved Machinery, our price on a full Roller Mill from 20 bbls. to 1000 bbls., need not rest on our statements, but are invited to write to any of the following millers and ask them what they think of the Case Machinery. We shall not write any one of them and influence their replies. They are all using our full line of Roller Machinery, Purifiers, etc., etc., and remember that you can only get the Case Automatic Feed, "Bismarck" Rolls and Case Purifiers of this Company. Write to any of the following parties and get their reply. We can give hundreds more of such names.

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WIKE & PERRY...	Berry, Ill.
D. F. ROBINSON,	Georgetown, D. C.
LATROBE MILLING CO.	Latrobe, Pa.
W. S. BACON,	Tiffin, Ohio.
PECKLER MILLING CO.	St. Jacobs, Ill.
W. H. TENNEY & SON	Georgetown, D. C.
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R. T. ALLEN & CO.	Fond du Lac, Wis.
McINTOSH & SON...	Monticello, Ill.
R. TUTTLE.	Columbia City, Ind.
J. H. JONES.	Jamesport, Mo.
GOOLD BROS.	Howard, Dakota.

BRACKEN & CO.	Jamestown, Pa.
GEO. W. NICEWANNER.	Piqua, Ohio.
JAS. WELLMAN.	Flint, Mich.
J. H. JONES.	Jamesport, Mo.
BUSBY & SON.	Lebanon, Ind.
GEO. ESMOND.	Fort Wayne, Ind.
A. B. KESTLER.	Carroll, Ohio.
A. DIETLY & SON.	Mooreheadville, Pa.
R. K. AILES & CO.	Ann Arbor, Mich.
R. C. POAGE & SON.	Ashland, Ky.
WOLF BROS.	New Haven, Mo.
JAS. H. BIDDLE.	Weston, Ohio.
LLOYD & BIVINS.	Terrell, Tex.
JAS. R. GEBHART & SON.	Dayton, Ohio.
KEEN & BARREN.	Weston, Mich.
JAMES ROGERS.	Litchfield, Ill.
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With equivalent words in English, French, German, Spanish and Italian.

(From the *Journal de la Meunerie*, and other sources.)

ENGLISH.	FRENCH.	GERMAN.	SPANISH.	ITALIAN.
Wheat	Blé	Weizen	Trigo	Fromento
Flour	Farine	Mehl	Farina	Farina
Aspirator	Aspirateur	Aspirator	Aspirador	Aspiratore
Apparatus for absorbing the dust, etc., produced by the action of cleaning or of grinding grain, and for conducting it to a separate chamber.				
Break Roll	Cylindre Broyeur	Schrotwalzenstuhl	Triturador	Macinatore
A corrugated roll used in breaking down wheat.				
Corrugation	Cannelure	Riffel	Canaladura	Rigatura
Grooves or corrugations in rolls, either straight or oblique, generally running the length of break rolls.				
Bran	Son	Kleie	Salvado	Crusca
The cuticle of the wheat berry separated from the farinaceous mass.				
Disintegrator	Désagrégateur	Disintegrator	Desmenuzador	Disintegratore
Machine used for the disintegration of grain.				
Disintegration	Desagregation	Aufloesung	Desmenuzacion	Disintegratori
The separation of grain into particles.				
Elevator	Élevateur	Aufzug	Elevador	Elevatori
Apparatus used for the elevation of grain, or the various milling products, to the various floors in a mill.				
Lay Shaft	Arbre de Couche	Welle	Arbot	Albero
The shaft which receives the first movement for transmission to the various machines.				
To Sift	Bluter	Sichten	Cerner	Cernere
To separate by sieves the flour from the larger particles of the wheat berry.				
Roller	Cylindre	Walze	Cilindro	Cilindri
Denomination of the geometrical form given to rolls used in certain systems of milling; rollers are made of chilled iron, porcelain or stone.				
Chilled Iron	Fonte dure	Hartguss	Fundicion	Endurecida Ghisa
Splitter	Comprimeur	Quetschwalzenstuhl	Compresir	Compressore
A smooth roll used to first split or slightly crack the wheat, thus facilitating the extraction of the germ.				
Smooth Rolls	Cylindre Lisse	Glattwalzenstuhl	Liso	Lisci
Term applied to rolls having no corrugations or grooves, and which are used in the reduction of middlings.				
Millstone	Meule	Muehlstein	Muela	Macine
Stones made of Silex, and used for grinding wheat under the old-fashioned or low grinding system.				
Grinding	Mouture	Mahlen	Mohenda	Macinazione
Action of reducing grain to flour and offal by means of stones or rolls.				
Hopper-boy	Refridisseur	Kuhlkammer	Refrascador	Ruffreddatore
Apparatus used to cool the flour coming from the grinding stones or rolls.				
Water Tank	Reservoir d'eau	Wasserbehälter	Arca de Agua	Serbatojod'Acqua
A receptacle for water.				
Furrow	Sillon	Furche	Surco	Soleo
Furrows or grooves made in the working faces of millstones, serving to expedite the exit of the ground material, and to keep it cool.				
Bolting Machine	Bluterie	Beutelmaschine	Cernedor	Buratti
Apparatus clothed with silk, used in sifting or dressing flour.				
Centrifugal Dressing Machine	Bluterie	Centrifugalsicht-maschine	Cernedor	Buratti
Centrifuge	maschine	fugo	fugo	Centrifughi
Machine used for the same purpose as the preceding one, but centrifugal force being used in dressing the flour.				
Centrifugal Force	Force Centrifuge	Centrifugalkraft	Fuerza Centrifuga	Forza Centrifuga
Forced by means of which any substance turned round a fixed point, is forced outward in a tangential direction.				
Scalper	Diviseur	Sortir-Cylinder	Divisor	Divisore
Machine, usually clothed with wire, for separating grain into various sizes, or for separating the flour from the broken grain after the various "breaks" in the gradual reduction process.				
Grain Aspirator	Tarare	Putzmaschine	Limpiaador	Tarare
Apparatus used to clean wheat by means of aspiration, which attracts the lighter particles to the top and allows them to be carried off by the action of a ventilating fan.				
Separating	Trieur	Fruchtsortir-Cylinder	Escogimiento	Separatore
A cylinder furnished with perforations or indentations, suited to the various sorts of grain, etc., which are required to be separated from the wheat.				
Mixer	Mélangeur	Mehlmischmaschine	Mezclador	Mescalatore
Apparatus for mixing various sorts of flour.				
Germ	Germe	Keim	Germen	Germi
That portion of the grain from which springs or germinates the plant. Being composed almost entirely of oily matters it is preferable to eliminate it from the flour.				
Dust	Poussière	Staub	Polvo	Polyvere
Turbine	Turbine	Turbine	Turbina	Turbina
Hydraulic wheel with vertical axis, which when at work is completely submerged in the water.				

From *The Miller's Gazette* (London).

BUILDING 100 FREIGHT CARS IN NINE HOURS.

This altogether unparalleled feat was performed in the freight car shops of Pullman's Palace Car Company, at Pullman, Ill., on August 18th. The cars were flats, and formed part of an order for the Vicksburg, Shreveport & Pacific Railway Company, which desired to have them delivered as soon as possible. The task was accomplished without any special extra preparation. The work was "laid out" as usual on Saturday, that is, five sets of wheels and axles were placed on each of the seven tracks used in the work, and the materials for each of the cars were placed along the tracks in the usual manner. When the whistle sounded at 7 A. M. the men sprang to their work. Of the twenty-nine gangs, twenty-eight consisted of four men each, but the best gang was one hand short, because of sickness. The three men preferred to do the work themselves rather than take on a fourth hand. The first completed car was turned at 9:15 A. M., and the first lot of twelve completed cars was pulled out of the shop at 10:40 A. M. The hearty interest felt by all the men in this splendid contest was shown by the cheers which rang along the lines when this first finished lot began to move out of the shop. The writer reached the scene at about 4 P. M. and found the floors being laid on the last two or three of the 100 cars. It is within bounds to say that the whole number was finished by 5 P. M., and by 6 P. M. twenty-four of them were lettered and ready to ship. The remaining seventy-six were lettered and shipped during the next day. —*Railway Age*.

The report on the comparative experiments in different milling systems, lately undertaken by the Syndicate of Grain and Flour in Paris, with the co-operation of the French Minister of Agriculture, has been presented to the National Agricultural Society.

The volume includes the reports of M. Grandvoisin on the proceedings and results of these experiments; of M. Aimé Girard on the chemical and microscopical analyses of the principal milling products; of M. Lucas on the experiences of panification; of M. Prager on the classification of brans; of M. Guillier on the classification of brown and dust flours. These reports are followed by an essay of M. Gatellier on his personal experiences in experimenting on the possibility of increasing the richness of wheat in gluten.

M. Gatellier thinks that, with a proper system of cultivation and carefully chosen seed,

it is practicable to increase the percentage of gluten in wheat kernels, and effectually solve the question which inevitably will arise between milling and agriculture, as it has already arisen between sugar refineries and agriculture, in relation to the relative richness of beets in sugar.

M. Gatellier finally gives some details of a voyage, which a committee of the Agricultural Society of Meaux, of which he is president, has just made in Germany and Austria-Hungary. The committee found there a more successful agriculture than in France, and M. Gatellier thinks that this success is principally due to the development of professional instruction. He adds that the variety of wheat known as *Shirriff's square-head* is cultivated on a large scale and gives a very large yield, but believes, nevertheless, that there is an offset to be made on account of the quality of this wheat.

On this question, M. Tisserand relates the practice adopted by M. Raimond, a farmer in the neighborhood of Nemours, who sows a mixture of three kinds of wheat—blue, Bordeaux and Chiddam, and by this means obtains a much larger yield than by sowing each variety separate. He thinks that this fact offers a useful hint for farmers, as the result is analogous to that observed in cultivating meslin.

OIL MADE OF GRAPE STONES.

Grape stones are a kind of seed, which has nothing in common with wheat, rye or even oats. Nevertheless, it may interest our readers to know that they are largely used in Italy for extracting the oil which they contain. This oil serves principally for lighting purposes, and Modena is the center of this industry. The stones contain about 18 per cent. of their weight of oil. It varies, however, in different kinds of grapes, and stones of white grapes contain less than other kinds. The color of this oil is a golden yellow. About 25 per cent. is lost in refining.

There is no reason why this industry should not be introduced in the grape-growing districts of this country, and rival in importance the manufacture of the cotton-seed oil.

STEEL CASKS.

A Wolverhampton firm has turned its attention to the manufacture of casks and barrels of steel. The two edges of the sheet of steel which form the cask are brazed together in such a manner as to justify the title of "seamless," which the patentees have applied to these productions. The head of

the barrel is also riveted to the body, so as to leave no seam, and the end rims are shrunk on hot, thus making a very solid end, while, at the same time, the rims are thick enough to give a good purchase to the grapping hooks and hoists and cranes, for loading and unloading purposes. The bush for the tap does not project beyond the rim, so that the nozzle is not liable to be knocked about and injured. The casks are more durable than wood, less bulky and lighter—an 18-gallon steel cask weighing some 10 pounds less—a not unimportant consideration as regards transit. In point of shape, a steel barrel is exactly that of a well-formed wooden one, the bulge of the belly allowing of its being easily rolled along, and better managed by one man than drums can be by two.

"GI'ME A CITY DIRECTORY."

A party of mill-furnishing commercial tourists happened to meet in the city of Indianapolis, and soon a number of local milling celebrities joined them. After various meanderings about the city, during which various brands of champagne and Kentucky "mountain dew" were sampled, the jovial party brought up at one of the leading hotels. One of the party walked up to the clerk and said:

"Gi'me a city directory."

"What the dickens do you want of a city directory at this time o'night?" asked the clerk.

"Why, dang it," said he, "I want—to—find out—where—I—live."

"All right" replied the clerk, "tell me your name and I'll find it for you."

"My name is Dan, By Jinks! Everybody knows me," he said.

"Certainly" replied B——g, one of his friends, stepping up, "look for Dan —."

The address was soon found, and after a "night-cap" Dan went home supremely happy.

HOW TO CURE MUSTINESS IN GRAIN.

Not unfrequently stored grain emits a damp or musty odor, the reason of which, in all cases is a surplus of dampness, and a lack of proper ventilation. If the odor is barely perceptible, it is generally sufficient to shovel over the grain at short intervals, making only low heaps and admitting as strong a draught as possible in the store room. But if there is an intense odor, showing that the deterioration of the seed substance has made considerable progress, it is more difficult to clean the grain, and it requires more energetic means. A process, which often is attended with success, consists in mixing the grain with powdered charcoal. Take finely powdered and sifted charcoal in the proportion of $\frac{1}{2}$ per cent. ($\frac{1}{2}$ bushel of charcoal to 100 bushels of grain), and mix it thoroughly with the grain and as uniformly as possible, and leave it about four weeks before cleaning. If necessary, this procedure must be repeated.

PREPARATION OF ESSENCE OF VANILLA FROM OATS.

A short time ago it was announced that the researches of M. Sanson had led to the discovery and separation of *areine*, the active principle in oats, in which he recognized an odor of vanilla. This perfume in a grain of oats was known to and mentioned by Valmont de Bommare in his *Dictionary of Natural History*, and it was employed by some cooks to impart to their preparations the odor and taste of vanilla, which is in reality quite noticeable in the oats, and more abundant in black than white oats.

Now, M. Journet, another French chemist, by his own experiments, has satisfied himself that it is only in the shell of the grain this aromatic principle exists, and does not occur in the meal. He has formulated this fact as follows:

1. Oats contain in its shell an aromatic principle analogous to that of vanilla, which may be extracted with water and afterwards alcohol.

2. This extract may be used for the various preparations where vanilla is employed merely as flavoring, such as liquors, ice-cream, caramels, etc.

NONSENSE.

If at first you don't succeed, try again. If one tailor won't trust you, try another.

It is still a question of considerable doubt which a woman can do best—drive a hen or talk politics.

THE Boston Traveller says that nickel is the coming metal. Everybody that has any cents knows that it has come already.—*New Bedford Standard*.

A WOMAN of Greenwood, Me., is reported to be cutting her fourth set of teeth. There's a woman in Rochester who is expecting her fifth set from Philadelphia.

"IN what condition was the patriarch Job at the end of his life?" asked a Sunday school teacher of a quiet-looking boy at the foot of the class. "Dead," calmly replied the boy.

A BACHELOR, upon reading that "two lovers will sit up all night with one chair in the room," said it could not be done unless one of them sat on the floor. Such ignorance is painful.

A SHREWD old lady cautioned her married daughter against worrying her husband too much, and concluded by saying: "My child, a man is like an egg. Kept in hot water a little while, he may boil soft; but keep him there too long, and he hardens."

A WRITER in the East says of a camel: "It travels at a slow, lounging pace, beyond which it is dangerous, with nine camels out of ten, to urge them, or else, as Asiatics say, they 'break their hearts' and die 'literally' on the spot." The district messenger boy seems to have much the same nature.—*Boston Post*.

"IF," said an Austin school-teacher, "you go to a butcher shop and pay 10 cents a pound for meat, how many pounds?" Up went the hand of a new boy from the country. "What is it, Johnny?" "When we want meat we don't go to a butcher's shop. Pa goes out on the prairie and kills a maverick."—*Texas Siftings*.

"JOHN what is the best thing to feed a parrot on?" asked an elderly lady of her bachelor brother, who hated parrots. "Arsenic!" gruffly answered John.

AN Irishman who had a pig in his possession was observed to adopt the constant practice of filling it to repletion one day and starving it the next. On being asked his reason for doing so, he replied: "Och, sure, and isn't it that I like to have bacon with a stroke o' fat and a stroke o' lard equally, one after t'other?"

IN Arkansas the law forbids the erection of a saloon within five hundred yards of a school-house. This is a wise law. It was very annoying for the children to have to go to the saloon every time they wanted to recite their lessons.

"It is very sad," said a Scotchman, "it is very sad, indeed, to think on the number of the world's greatest men who have lately been called to their last account. And the fact is," added he, with unction, "I don't feel very well myself."

A FAR-SIGHTED OFFICIAL.—Bank President—"My dear, I suppose you know that I am not only the president of the bank, but the owner of most of the stock?"

Daughter—"Yes, pa."

"And if I am not mistaken you are becoming rather fond of Mr. Lightfinger, my cashier?"

"Yes, pa; I confess it is true. But how do you know?"

"I have eyes. But why have you tried so hard to conceal this from me?"

"O, pa, please forgive me; but I knew that you'd object to my marriage with a poor man, and, dreading your terrible anger, I have tried my best to conquer my feelings. Indeed, indeed I have!"

"Conquer them? Great St. Bullion! I want you to marry him as soon as possible?"

"O, you dear, darling old pa! But what has wrought this strange metamorphosis!"

"O, nothing; only I thought it would be just as well to keep all the bank funds in the family."

No Irishman ever uttered a better bull than did an honest John, who, being asked by a friend: "Has your sister got a son or a daughter?" replied: "Upon my word I don't know whether I am an uncle or an aunt."

HIS INVESTMENT IMPERILED.—"Why don't you go to work?" a gentleman asked a very ragged tramp.

"I am anxious and willing to work," replied the tramp, "but what's the use of it until they settle the tariff question?"

"What has the tariff to do with it?"

"A great deal. Suppose I went to work and accumulated a

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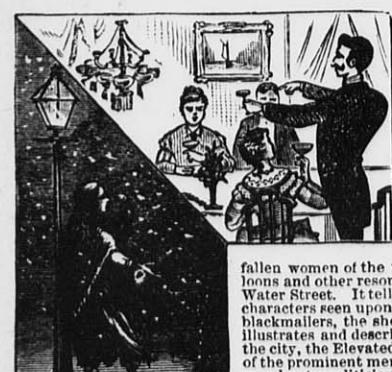
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BREAD MAKING.

In a series of papers written for *Knowledge* by the celebrated English chemist, Professor W. Mattieu Williams, under the comprehensive title of "Chemistry of Cookery," he treats the "bread making" as follows:

Let us first note the effect of cooking on gluten. The action of hot water is to effect a partial solution, that is, it effects a loosening of the bonds of solidity, but not going so far as to render it completely fluid. It appears to be a sort of hydration, similar to that which is effected by hot water on starch, but less decided. To illustrate this, wash the gluten from the flour with the aid of cold water in one sample; then boil some flour as in making ordinary bill sticker's paste, and wash this also in cold water. The gluten will come out with difficulty, and when separated will be softer and less tenacious than that obtained from the raw specimen. This difference remains until some of the water it contains is driven out. The importance of this in the cookery of grain food is very great, as anyone who aspires to the honor of becoming a martyr to science may prove by simply making a meal on raw wheat, masticating the grains until reduced to small pills of gluten, and then swallowing these. Mild indigestion or acute spasms will follow, according to the quantity taken and the digestive energy of the experimenter. Raw flour will act similarly but less decidedly.

Bread-making is the most important, as well as a typical example of the cookery of grain food. The grinding of the grain is the first process of such cookery; it vastly increases the area exposed to the subsequent actions. The next stage is that of surrounding each grain of the flour with a thin film of water. This is done in making the dough by careful admixture of a modicum of water and kneading in order to squeeze the water well between all the particles. The effect of insufficient enveloping in water is sometimes seen in a loaf containing a white powdery kernel of unmixed flour. If nothing more than this were done, and such simple dough were baked, the starch granules would be duly broken up and hydrated, the gluten also hydrated; but, at the same time, the particles of flour would be so cemented together, as to form a mass so hard and tough when baked, that no ordinary human teeth could crush it. Among all our modern triumphs of applied science, none can be named that is more refined and elegant than the old device by which this difficulty is overcome in the every-day business of making bread. Who invented it? Its discovery was certainly very far anterior to any knowledge of the chemical principles involved in its application.

The problem has a very different aspect. Here are millions of particles, each of which has to be moistened on its surface, but each when thus moistened becomes remarkably adhesive, and therefore sticks fast to all its surrounding neighbors. We require, without suppressing this adhesiveness, to interpose a barrier that shall sunder these millions of particles from each other so delicately, as neither to separate them completely, nor allow them to completely adhere. It is evident that in the operation that supplies each particle with a partial atmosphere of gaseous matter, the difficult and the delicate problem will be effectually solved. This is done in making bread.

The seed which is broken up into flour contains diastase as well as starch, and this diastase, when aided by moisture and moderate warmth, converts the starch into dextrine and sugar. This action commences when the dough is made, and this alone would only increase the adhesiveness of the mass, if it went no further; but the sugar thus produced may, by the aid of a suitable ferment, be converted into alcohol. As the composition of alcohol corresponds to that of sugar, minus carbonic acid, the evolution of carbonic acid gas is an essential part of this conversion.

With these facts before us, their practical application in bread making is easily understood. To the water with which the flour is to be moistened some yeast is added, and the yeast-cells, which are very much smaller than the grains of flour, are diffused throughout the water. The flour is moistened with this liquid, which only demands a temperature of 72 deg. Fahr. to act with considerable energy on every granule of flour that it touches. Instead then, of the passive, lumpy, tenacious dough produced by moistening the flour with mere water, a lively "sponge," as the baker calls it, is produced which "rises," or grows in bulk by the evolution and interposition of millions of invisibly small bubbles of gas. This sponge is mixed with more flour and water, and kneaded again to effect a complete and equal diffusion of the gas bubbles, and finally the porous mass of dough is placed in an oven previously raised to a temperature of about 450 deg.

The baker's old-fashioned method of testing the temperature of his oven is instructive. He throws flour on the floor. If it

blackens without taking fire, the heat is considered sufficient. It might be supposed that this is too high a temperature, as the object is to cook the flour, not to burn it. But we must remember that the flour which has been prepared for baking is mixed with water, and the evaporation of this water will materially lower the temperature of the dough itself. Besides this, we must bear in mind that another object is to be attained. A hard shell or crust has to be formed, which will so incase and support the lump of dough as to prevent it from subsiding when the further revolution of carbonic acid gas shall cease, which will be the case some time before the cooking of the mass is completed. It will happen when the temperature reaches that point at which the yeast cells can no longer germinate, which temperature is considerably below the boiling point of water. In spite of the high outside temperature, that of the inner part of the loaf is kept down to a little above 212 degrees by the evaporation of the water contained in the bread; the escape of this vapor and the expansion of the carbonic acid bubbles by heat increasing the porosity of the loaf. The outside being heated considerably above the temperature of the inner part, this variation produces the differences between the crust and the crumb. The action of the high temperature directly converts some of the starch into dextrine, and a part of the latter again into caramel. Thus we have in the crust an excess of dextrine as compared with the crumb, and the addition of a variable quantity of caramel. In lightly baked bread, with a crust of uniform pale yellowish color, the conversion of the dextrine into caramel has barely commenced, and the gummy character of the dextrine coating is well displayed. Some such bread appears as if it had been varnished, and the crust is partially soluble in water. This explains the apparent paradox that hard crust, or dry toast, is more easily digested than the soft crumb of the bread, the cooking of the crumb not having been carried beyond the mere hydration of the gluten and the starch, and such degree of dextrine formation as was due to the action of the diastase of the grain during the preliminary period of "rising."

Everybody has, of course, heard of "aerated" bread and most have tasted it. Several methods have been devised, some patented, for effecting an evolution of gas in the dough without having recourse to the fermentation above described. In spite of the great amount of ingenuity expended upon the manufacture of such unfermented bread, and the efforts to bring it into use, but little progress has been made. The general verdict appears to be that unfermented bread is not so "sweet," that it lacks some element of flavor, is "chippy" or tasteless, as compared with the good old-fashioned wheaten bread, free from alum or other adulterations. My theory of this difference is that it is due to the absence of those changes which take place while the sponge or dough is rising, when the diastase of the grain is operating, as in germination, to produce a certain quantity of dextrine and sugar, and possibly acting also on the gluten. Deficiency of dextrine is, I think, the chief cause of the chippy character of aerated bread. It must be remembered that this stage is protracted over several hours, during which the temperature most favorable to germination is steadily maintained.

The Winnipeg *Commercial* in speaking of the Manitoba harvest, says: As the reapers and binders have almost ceased working, and threshing machines are now commencing their work, reliable reports as to the state in which the harvest has been gathered in can now be received, and these give reason for congratulation and satisfaction. The bulk of the wheat crops have been secured in good condition, and the small portion of it which can be rated as injured, is but slightly so. That some wheat will be slightly bleached is beyond a doubt, and that at very rare intervals a sheaf in a slightly sprouted condition may be met with is true, but cases of the latter are so rare that there are whole municipalities in which one could not be found. What slight damage has been done is attributed to the rains which prevailed during the last week of August and the first two of September. Yet we must not conclude that these rains were an unmixed evil. On the contrary, they will put thousands of dollars in the pockets of our farmers. Six weeks ago it seemed as if the late oat crop was going to turn out a total failure throughout the entire country, but the rains during the last week of August improved this crop so much that the gain thereby will ten times cover all the damage they did to wheat. As if every circumstance was in the favorable combination, we are now at the close of September, and not a sign of frost has made its appearance, so that we have now safe a heavy late out crop, which, six months ago, seemed only to be fit to be plowed under.

When we take this into consideration, we

may look upon the late rains as a blessing in disguise, and the improvement in root crops has also been great owing to these same rains. Taken altogether we have every reason to be very grateful for a safe and abundant harvest, and let us hope that it is only one of many to come.

COAL SLACK.

One of the most interesting of the many problems in life is how to get something for nothing. All of us attempt the solution of this at times, without any very great success, unless we discover hitherto unworked fields which are waiting to be reaped. An opportunity of this character has existed for years; attention has been repeatedly called to it, but little or no advantage is taken of it. This opportunity for steam users lies in the immense amount of coal slack, culm, so-called, now in the coal regions waiting for purchasers. Millions of tons of good fuel can be had at merely nominal prices, if steam users choose to avail themselves of it. Culm cannot be used in ordinary furnaces, but appliances exist whereby it can be. To some extent it is used, but practically it is unknown as fuel in the market. The only element which militates against its cheapness is the law of supply and demand; as soon as any product is in general use it becomes a commodity, as such it is an article of merchandise, and the price rises. The sand from the seashore is a staple in this city for many uses, and brings a high price—for sand. Various attempts have been made to use coal slack in other lines of trade, but in comparison with the mountains which exist the consumption is not worth mentioning.

It would seem that steam users at any rate should avail themselves of the benefits of coal slack, and obtain cheap fuel, the cost of alterations to an ordinary furnace being very trifling in comparison with paying for commercial coal.—*Mechanical Engineer.*

In the Italian Senate, Senator Rossi and other high protectionists, made an attempt lately to have the import duty on grain increased, but was promptly voted down. The tariff is now 1.40 lire (about 27 cents,) per cwt., which is higher than in all other European countries, in which agriculture is not in a very backward state. Spain levies a duty of 82 cents, and Portugal \$1.09 on each cwt., while importation is entirely free in Great Britain, Belgium, Holland, Sweden, Denmark and Russia.

BOOK NOTICES.

DESCRIPTIVE AMERICA.—We have received from the publishers, Messrs. G. S. Adams & Son, of No. 59 Beekman St., New York, the Michigan number of "Descriptive America." It is an elegant specimen of the printers' art, being printed on beautiful paper with good ink, and shows skillful press-work. It appears to be the object of the publishers to devote a number to each state or territory in America, and to write it up thoroughly, giving numerous illustrations and reliable statistics. The work is sold for fifty cents per number.

NEWS.

Wood & Kenyon, Onawa, Ia., are putting in two pair rolls with patent automatic feed from the Case Manufacturing Company, Columbus, O.

Dan'l Smith, Hayesville, O., is making some changes in his mill, and is putting in three pairs of rolls with patent automatic feed from the Case Manufacturing Company, Columbus, O.

The Case Manufacturing Company, Columbus, O., received a cablegram from A. B. Childs & Son, London, Eng., for two pair rolls with patent automatic feed and two Case purifiers.

Thomas Cliff, an employe in Sylvester's mill, at Boscobel, Wis., recently got caught in the gearing, was terribly mangled, and has since died of his injuries. One of his arms was crushed nearly to the shoulder.

A. B. Wilkins & Son, Patalaska, O., are making some changes in their mill and putting in one "Little Giant" break machine and scraper combined, and two pairs of rolls with patent automatic feed.

J. W. Chatham, of Harlan, Ia., has concluded to change his mill to the roller system, and after investigating the different systems, has placed his order with the Case Manufacturing Company, Columbus, O., for an outfit of breaks, rolls, purifiers, centrifugals, etc., for a full gradual reduction mill on the Case system.

The Case Manufacturing Company, Columbus, O., have just shipped: To J. E. McCray & Co., Omaha, Neb., a No. 1. double purifier with patent automatic feed; to A. B. Childs & Son, London, Eng., two sets of rolls and one No. 1 double purifier with patent automatic feed; to D. H. Turner, Blair, Neb., one No. 1 double "Chase" purifier.

The Mazeppa (Minn.) Mill Co., made an assignment Sept. 5, to W. H. Putnam. The liabilities are \$140,000; assets, \$175,000; capital stock, \$170,000. Gov. Hubbard is president. The firm has been a sort of balance-wheel to the Minnesota Elevator Company. The obligations of the former to the latter are \$53,000, which caused the failure of the Elevator Company.

The La Crosse, Wis., cracker factory, says the local exchange, has commenced operations, and is now filling orders to the trade in all directions. The oven, with its revolving wheel, and all the other improved machinery, works to a charm. As fast as the crackers are baked, they are elevated on wooden cleats attached to an endless belt to the second story of the building, where they are packed in boxes or barrels. This work is done by girls. Eight young ladies and two men are now employed in this department. Twenty persons are now on the pay-rolls at the fac-

tory. The crackers are of fine quality and cannot fail to make a reputation.

The Minnesota Elevator Company of Red Wing, Minn., organized about a year ago, made an assignment Sept. 3, to Judge E. T. Wilder. The company owned between thirty and forty elevators situated on Milwaukee & St. Paul railway, running east and west from Reed's landing. The liabilities are said to be about \$200,000 and assets \$200,000. The cause of the failure is not definitely known, though it is rumored that the institution has been caught on wheat deals. The news of the assignment caused a run on the First National Bank of Wabasha, which, it is understood, had discounted some of the company's paper. The bank suspended payment for a few hours, but later in the day resumed and announced its ability to meet all its obligations promptly.

The Case Mfg. Co., of Columbus, O., have recently received the following orders: Jacob Weisheimer, Clintonville, O., 4 pairs rolls and three-reel scalping chest; G. Y. Bonus, Sheldon, Ia., 6 patent feed-boxes; Giese & Brundlett, Alta, Ia., a complete milling outfit on the Case system; A. F. Ordway & Son, Beaver Dam, Wis., 2 pairs rolls with patent feed; H. Smith & Co., Grafton, Wis., a complete milling outfit on the Case system for a 100-barrel mill; S. W. Chatburn, Harlan, Ia., a complete roller mill—Case system; Thomas Bros., Madison, Neb., a "Little Giant" Break Machine, with scalper; A. H. Fairchild & Son, Bloomfield, N. Y., Case rolls with patent feed; A. B. Childs & Son, London, England, 2 pairs rolls with patent feed, and 2 "Case" purifiers; Richmond City Mill Works Case rolls with patent feed, etc.

A short time since, the West Shore R. R. Co. sent out requisitions to the different engine builders, to which they had a full response, and in the face of much lower prices, they have placed their order for a 300 H. P. Cummer engine. The engine is to supply motive power for their large shops at Frankfort, N. Y. The Cummer Co. feel quite elated at receiving this order, as it comes in the wake of an order received from the Pennsylvania R. R. Co. under similar conditions, and under just as severe competition. The engine for the latter Co. has just been shipped, and will be used in their extensive new works at Indianapolis, Ind. The Cummer Co. has also just been favored with orders for a 170 H. P. engine for the Hadley Cotton Mills, Holyoke, Mass.; a 130 H. P. engine, with outfit complete for the Upton Mfg. Co., of Battle Creek, Mich.; and two engines, 70 H. P. each, for the Citizens' El. Lt. Co., Akron, O. Cummer engines have just been started at the Louisville Exposition, St. Louis Exposition, and in the flouring mills of Cheesman & Driesbach, Touganoxie, Kans. The above Company report work on the three large Ballantine Refrigerating machines for Joseph Husler, of Newark, N. J., progressing very rapidly, their orders still on the increase, and a splendid outlook for future business.

The Case Manufacturing Company, Columbus, O., have received the following orders the past month: From W. T. Pyne, Louisville, Ky., for sets of rolls with patent automatic feed; the contract of Cox & Faulkner, Jonesboro, Ind., for a complete line of breaks, rolls, purifiers, centrifugals, scalpers, bolting-chests, etc., for a full roller mill on the Case system, using twelve pairs of rolls with patent automatic feed; from Wisner Bros., Lowell, Mich., for one pair rolls, with patent automatic feed; from G. J. Burrier, Sunbury, O., for two pair rolls and other machinery; J. W. Scott, Bentonsport, Ia., for breaks, rolls, purifiers, etc.; the contract of C. H. Ellis, Dubois, Ind., for a complete outfit of breaks, rolls, purifiers, centrifugal reels, scalping-reels, bolting-chest, etc., for a full roller mill on the "Case" system—twelve pairs of rolls will be used, and the mill, when completed, will have a capacity of sixty to seventy-five barrels; from Leggate & Everdeen, Centerville, Ind., for two pairs of rolls with patent automatic feed; from S. L. Ellis & Co., Hopkinsville, Ky., for two pair rolls with patent automatic feed; the contract of C. W. Ellis, Davies, Ind., for a full outfit of rolls, purifiers, centrifugals, scalpers, etc., for a complete roller mill on the "Case" system, twelve pairs of rolls with patent automatic feed will be used; through the Flenekin Turbine Co., of Dubuque, Ia., for two pair rolls and one No. 1 double purifier with patent automatic feed, to be shipped to E. Maskery & Son, Marquoketa, Ia.; from the C. A. Cambrill Manufacturing Company, Baltimore, Md., for six feed-boxes for their purifiers. This makes over twenty Case automatic feed-boxes that the C. A. Cambrill folks are using on different purifiers; from Kerfoot Bros., Des Moines, Ia., for four sets rolls with patent automatic feed; from J. B. Ficklin, Fredericksburg, Va., for one set of rolls with patent automatic feed; from M. Jones & Son, Beacon, Ia., for two pair rolls with automatic feed; from W. McKellop, Perry, Mich., for one Case improved Centrifugal reel and two pair rolls with automatic feed; the contract of Chas. Emke, Fredonia, N. Y., for an outfit of breaks, rolls, purifiers, scalpers, centrifugals, bolting-chests, etc., for a full roller mill on the Case system, using twelve pairs of rolls with patent automatic feed; from Simon Gebhart & Son, Dayton, O., for two pair rolls with automatic feed; from Geo. W. Miller, Angola, Ind., for one pair rolls with patent automatic feed; from Leggate & Everdeen, Centerville, Ind., for a patent automatic feed for their rolls; from Hunter & Johnson, Mechanicsburg, O., for one pair rolls with patent automatic feed; from Flenekin & Graham, Dubuque, Ia., for two pair rolls with automatic feed; from Grafton, Wis., for a complete outfit of breaks, rolls, purifiers, scalping-reels, centrifugal-reels, bolting-chests, etc., for a full roller mill on the "Case" system, twelve pairs of rolls with patent automatic feed will be used; through the Flenekin Turbine Co., of Dubuque, Ia., for two pair rolls and one No. 1 double purifier with patent automatic feed, to be shipped to E. Maskery & Son, Marquoketa, Ia.; from the C. A. Cambrill Manufacturing Company, Baltimore, Md., for six feed-boxes for their purifiers. This makes over twenty Case automatic feed-boxes that the C. A. 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Cambrill folks are using

ITEMS OF INTEREST.

ONE of the handsomest catalogues of milling machinery which we have seen for a long time has just been issued by The Nordyke & Marmon Co., of Indianapolis, Ind. It appears to be perfect in every respect and does the compiler and printer great credit.

A New York paper sums up matters as follows: The crop movement for this year compared with 1882 and 1883, beginning with crop year of wheat received at interior points of accumulation, shows: Wheat, 1884, 32,677,000 bush.; corn, 21,219,000 do.; oats, 16,930,000; wheat, 1883, 26,032,000 bush.; corn, 29,538,000 do.; oats, 16,737,000 do.; wheat, 1882, 27,918,000 bush.; corn, 13,352,000 do.; oats, 13,375,000 do. In the warehouses of Great Britain, France and Germany the stock of wheat averages one-half less than in 1883. Exports from India last week show a decrease compared with last year of 60 per cent. or 2,300,000 bush. versus 5,410,000 bush from Jan. 1 to July 31. Exports from Calcutta and Bombay aggregated 13,283,000, against 23,525,000 bush. in 1883. The crop yield of the world is about 25 per cent. greater than 1883.

Mail advices report French markets during the third week of September to have been quiet but steady on wheat and flour. Offerings in the country small, but sufficient. Neither was there any activity at the ports, where foreign wheat was weak. The Paris *Bulletin des Halles* makes its final estimate of this year's French wheat crop and places it at 294,389,000 bush., or 10,000,000 bush. more than the official estimate of last year's crop. The quality is said to be generally excellent. According to official returns, the net import of wheat and flour into France during August amounted to 545,000 qrs, against 548,200 qrs last year, and 549,500 qrs in 1882. At the close values of wheat were generally fairly maintained, but there were no signs of activity in the trade. The Paris "term" market was reported steady. There was a slight improvement in the wheat trade at both Antwerp and Brussels, but rye and other articles remained quiet. Red winter wheat delivered at Antwerp was quoted equal to 31s 9d to 32s 6d, per 480 lbs. German markets were generally steady. Dutch markets were quiet and rather lower. Austro-Hungarian reports showed flour to be in better demand for the lower qualities, which were getting very scarce, and prices were firmer, but fine and middling qualities remained very slow to sell. Wheat closed rather lower at both Vienna and Pesth. Russian advices report continued small shipments from St. Petersburg to the United Kingdom. This, however, seems to be due to the low prices ruling at home, and not to any scarcity in Russia, for it is reported that about 1,000,000 chets—about 750,000 qrs—are being warehoused at St. Petersburg, in default of buyers for export at suitable prices. There was some difference of opinion as to the probable quantity of Russian wheat exports during the present harvest, some parties estimating it at 7,000,000 and some at 8,000,000 qrs; but it may be as well to remark that the average of Russian exports during the last six years has been at the rate of 8,878,000 qrs per annum.

Numerous complaints have been made in the Northwest regarding the system of wheat shrinkage or dockage at Duluth, and in order to ascertain if there exists any ground for these alleged grievances a thorough investigation of the matter has been made by the *Pioneer Press*. The farmers claimed that they were being docked unmercifully this year, and the local elevator companies on the Northern Pacific and Manitoba roads alleged that in order to protect themselves against the Duluth elevator companies they are compelled to shrink the wheat to the proportions they have. The investigation has developed one fact, and that is the present crop of wheat contains more dirt and foul seed than any crop ever raised in the Northwest. Elevator men say, and farmers themselves admit the truth of this, that no such crop of wild buckwheat has ever been harvested with the wheat before. This is the principal trouble, though seeds of all kinds are found in great abundance in most all the wheat now being marketed. The average shrinkage by the local elevators is admitted to be not far from five pounds per bushel. At Fargo, Moorhead and other stations on the Northern Pacific road, it is not an unusual thing to dock wheat twelve and even fifteen pounds to the bushel on account of dirt.

WHEAT HARVESTS IN HUNGARY.

The following table, prepared from the official statistics of the Minister of Agriculture, shows the wheat crops in Hungary from 1869 to 1883, inclusively:

Year.	Cultivated hectares.	Yield, hectoliters.
1869	2,157,596	18,725,110
1870	2,024,102	22,239,653
1871	1,883,374	15,818,952
1872	2,020,391	15,664,361
1873	2,142,211	14,076,157
1874	2,245,705	21,613,693
1875	2,291,230	17,243,274
1876	2,603,051	18,207,781
1877	2,416,394	22,102,683
1878	2,502,765	38,276,987
1879	2,464,919	18,400,621
1880	2,312,139	28,250,000
1881	2,369,364	32,326,859
1882	2,505,855	48,874,338
1883	2,427,745	32,748,699

One hectare=2.471 acres.

One hectoliter=2 bushels 3 1/2 pecks.

NUTRITIVE VALUE OF DIFFERENT KINDS OF GRAIN.

According to latest researches, the different kinds of grain contain the following percentages of nutritive matter:

Proterine.	Fat.	Starchy matter.
Wheat	12.5	1.5
Rye	11.5	1.8
Barley	10.	2.5
Oats	10.	5.

SPECIAL BUSINESS NOTICES

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Don't order your Cloth until you have conferred with us; it will pay you both in point of quality and price. We are prepared with special facilities for this work. Write us before you order.

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MILL COGS AND CONVEYOR FLIGHTS. Cogs to order on shortest possible notice. Large stock of conveyor flights on hand.

N. P. BOWSHER.
South Bend, Ind.

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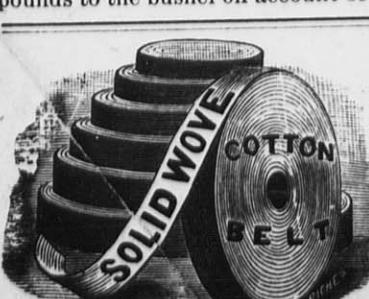
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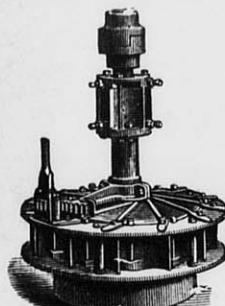
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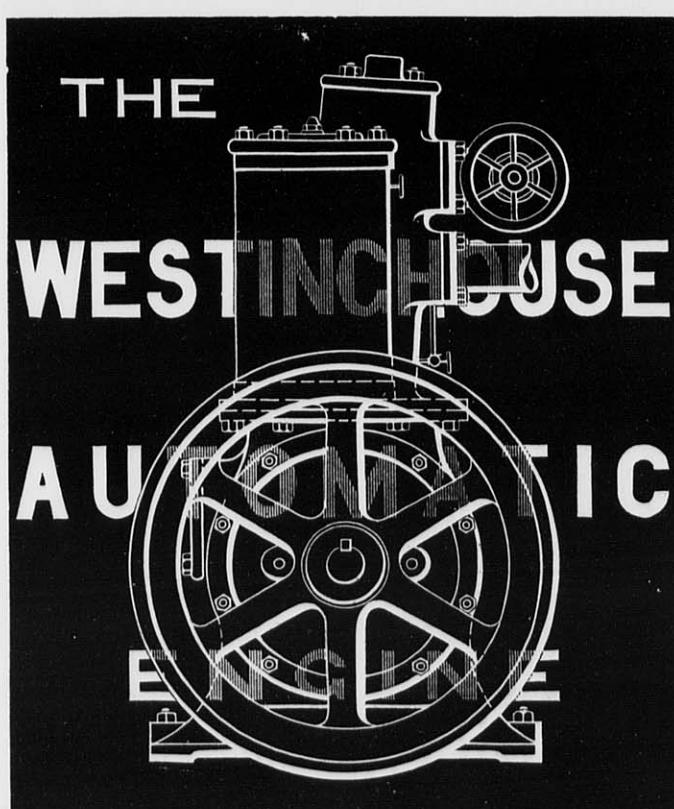
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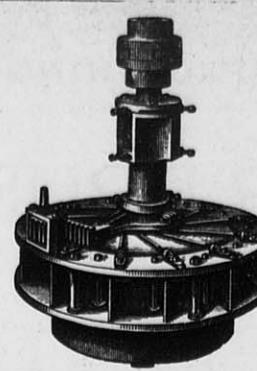
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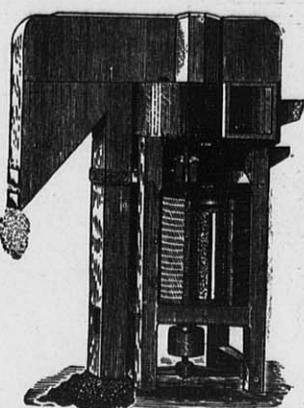
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Yours Truly,

KIDDER BROS.

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Yours truly,

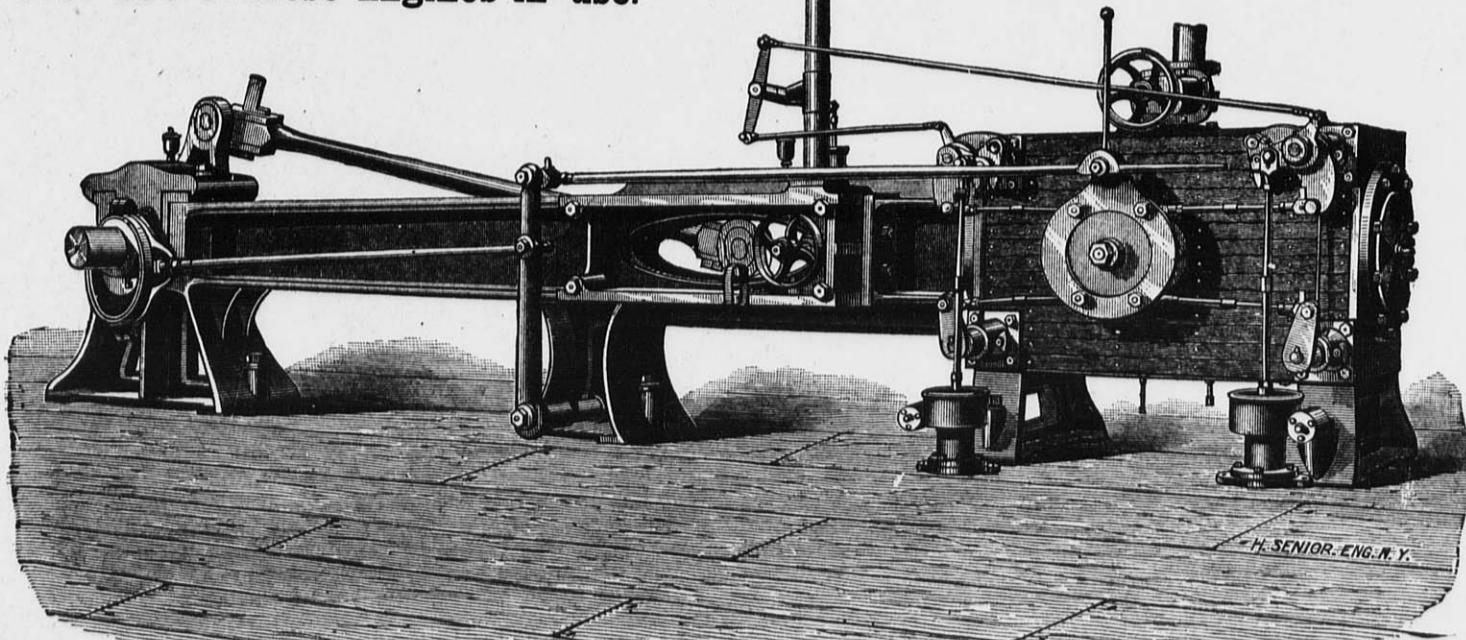
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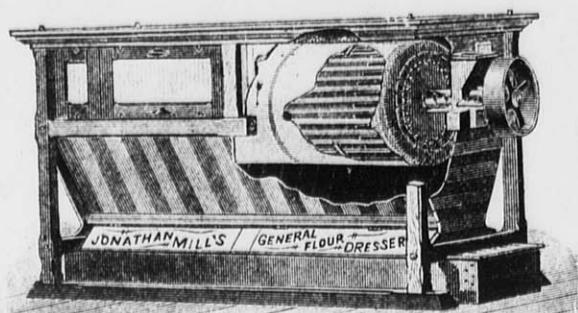
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Daisy Flour Mills.	Milwaukee, Wis.	Townshend & Proctor.	Stillwater, Minn.	B. D. Sprague.	Rushford, Minn.
Winona Mill Co.	Winona, Minn.	Sooy & Brinkman.	Great Bend, Kansas.	The Eisenmeyer Co.	Little Rock, Ark.
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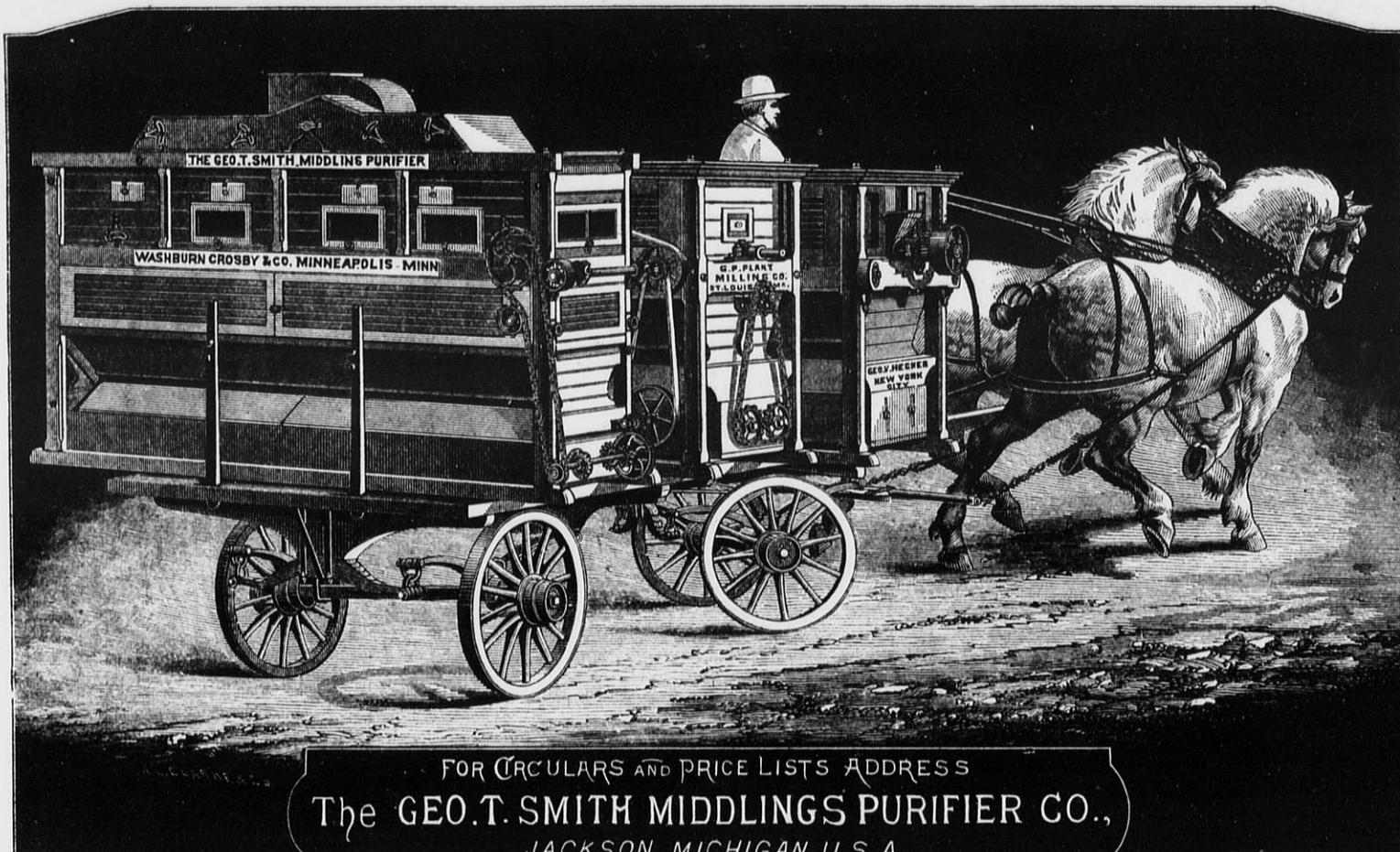
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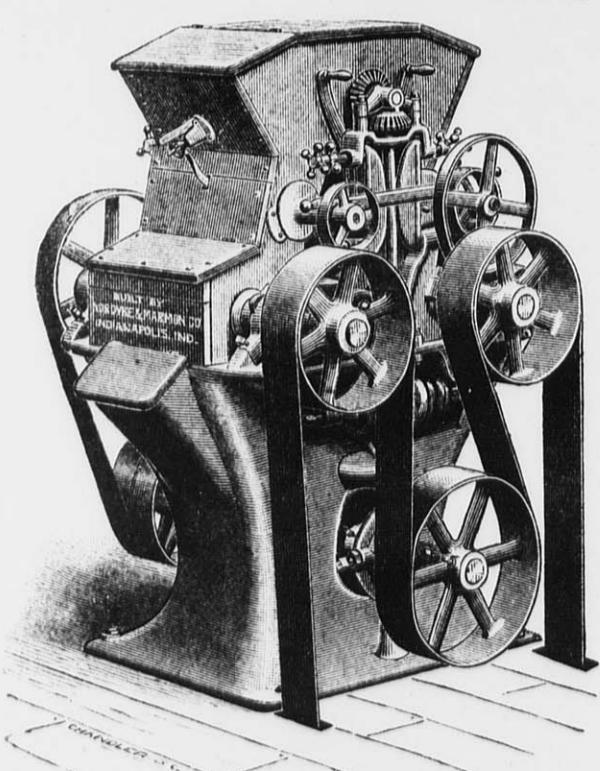
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Yours respectfully,

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Yours truly,

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